THE ADVENTURE OF WATER
IN İZMİR

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İzmir Metropolitan Municipality
Konak – İZMİR
Tel: 0 232 293 12 00
www.İzmir.bel.tr

THE ADVENTURE OF WATER IN İZMİR

Prepared by: Asil Kaya

Graphic Design-Implementation: Gülsüm Berdan Eren

Water has been one of life's irreplaceable elements throughout the history of humanity. Cities were built next to water and the need for water for societies that adopted a sedentary life kept its topicality during every era. Halkapınar springs (known as Diana baths in mythology) and its surroundings have been one of the most prominent settlement areas of İZMİR since the ancient times because of water. Under the governance and supervision of İZSU, water wells located in those areas are continuing to meet İZMİR's water needs.

Knowing our past, learning it and passing it to the next generations with our current knowledge is one of our greatest duties as societies living in today's world. In this booklet, we aim to show the adventure of water in İzmir which has a history of 8500 years and is home to many civilizations, cultures and beliefs.

We also aim to explain the adventure of water starting from the antiquity to present and the works of Izmir water and sewerage administration that have been going on for 30 years. I hope this work will be beneficial to the citizens of İzmir.

Behiye Fügen SELVİTOPU

General Director of
İzmir Water and Sewerage Administration
(İZSU)

INTRODUCTION

Water, the main source of life, is one of the essential components of human life. The most important component of cells, the tiniest component of living beings is water. In the core of all living creatures in the universe, there is water. Shortly, where there is water, there is life, where there is life, there is water.

When we look at the geographies where first civilizations occurred, we see that the fertile soil nearby water resources had been the main criteria in the selection of lands to settle. Hence, the presence of water resources made the city of İzmir, which has been the cradle of various civilizations, cultures and religions throughout its thousands of years of history, a perfect settlement.

Herodotus, the father of history, describes Lake Halkapınar one of the most significant water resources in İzmir, by saying "The place where the beautiful Artemis (Diana), the Goddess of abundance, and the accompanying fairies come and bathe in every day."[1] Hence, Lake Halkapınar was known as the "Diana Baths" in history and was mentioned in various mythological legends with this name. Such evidences are important in revealing the role of water resources in the historical and cultural richness of İzmir.

Beyond doubt, the contribution of water resources to the historical richness of İzmir, is not only limited to the above-mentioned evidences. Again, the waterways that were built to distribute water to the settlements from several sources, the archways, bridges, water fountains and public fountains built on these waterways were important structures that brought traces of people that lived in İzmir in different periods of history.

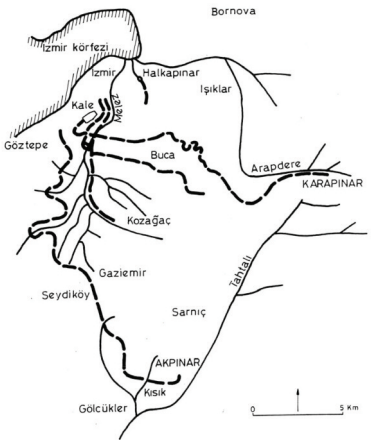
[1] The name of Artemis is mentioned as "Diana" in Roman Mythology.

The remnants of a fountain belonging to the ancient city of Smyrna. (Prof. Dr. Meral Akurgal Smyrna - Bayraklı Excavations)

The remnant of a water fountain, which was built to supply water for the ancient city of Smyrna, where traces of settlements from 5000 years ago can be found, is another significant piece. The other water resources that make İzmir the "Cradle of Civilizations" are the Karapınar Waterway, the Akpınar Waterway, the Kapancıoğlu Waterway, the Byzantium Waterway, the Osmanağa Waterway and the Vezir Waterway in Melez Valley.[2]

[2] Georg Weber, Waterways of İzmir (İzmir'in Su Yolları), Prepared by İlhan Pınar, First Edition, İzmir Metropolitan Municipality City Library, İzmir 2011, s. 9

Karapınar Waterway is known to be one of the first water transfer ways in İzmir. This waterway, which carries water to the city through baked clay pipes, is an architectural masterpiece. There is a water arch on the waterway, which dates back to the Late Roman Period.[3]

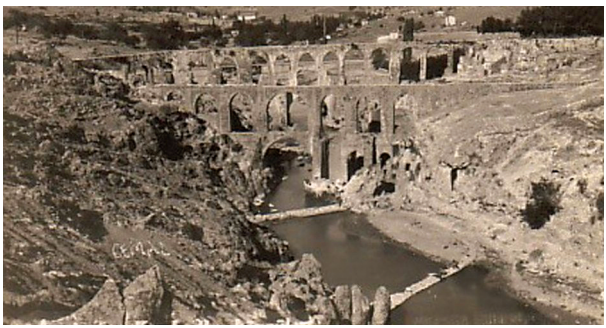


The routes of the main waterways that carry water to İzmir. (ÖZİŞ, Ü.; ÖZDEMİR, Y.; KOSOVA, A.; ÇÖRDÜK, A. (1999): İzmir's historical water transfer systems. İzmir, İzmir Branches of Engineering and Other Trade Associations, "İzmir Water Congress", p.45-56.)

Akpınar Waterway; According to two inscriptions from the Roman period,[4] this water, springing from the east of Kısık, an ancient Greek village in today's Menderes, used to be carried to the Zeus Temple on Değirmen Mountain, which is known as today's Bayramyeri.

Kapancıoğlu Waterway: This is a waterway which springs from the north of Tepecik and carries water to the water fountain that was built by İzmir's famous family Kapancıoğlu. It bears traces from the Roman period. [5]

[3] Ergün Laflı, "Various Documents Regarding the Waterways of Smyrna in the Late Antique Period.", II. Water Structures Symposium, Diyarbakır 16-18 September 2011, p. 62
[4] Georg Weber, ibid. p.31
[5] Georg Weber, ibid. p.39



The Kızılçullu Aqueducts that were used to carry the water that gave life to İzmir.

The Melez Valley Waterway; According to the report prepared by Georg Weber for the German Archeology Institute, the waterway was formed by the passing of water in the Kanlıgöl – Kaynaklar region and the Meles streamlet by going through the southern foot slope of Kadifekale via high aqueducts.[6] The waterway, which was also called the Buca waterway, was used both in the antique period and the periods thereafter.

Osmanağa Waterway; It is one of the most important waterways of İzmir. According to Weber, the waterway, the source of which is the flat area in Buca located on the southern part of the Şirinyer Train Station, is one of the most important waterways together with the Kızılçullu Aqueduct, referred to in resources as the *"Gaius Sextillius Pollio Aquaduct"*.

According to a deed of trust dated August 10, 1730,[7] the water coming from this waterway was carried into the houses in İzmir, and

[6] Georg Weber, ibid, p. 41

[7] M. Münir Aktepe, " A research about İzmir Water, Fountains, Public Fountains and Water Tanks with a Fountain." History Magazine, Page 30, Printing House of Literature Faculty, Istanbul 1976, page 150

The Vizier Aqueduct that was made by Köprülü Fazıl Ahmet Pasha in 1674.

continued to do so throughout the Republic Era, by the establishment of aqueducts in Sinekli (current Yeşildere) by Hacı Osman Ağa[8], who not only held a distinguished position at the time but also made great contributions to the reconstruction of İzmir.

Vezir waterway; It is another one of the most important waterways in İzmir. The earthquake in the spring of 1664 in İzmir, which did quite a lot of damage to the city, was reconstructed by the efforts of the grand vizier of the day, Fazıl Ahmed Pasha. Fazıl Ahmed Pasha, who established[9] many fountains, bridges, inns, bazaars and baths did his biggest service to the city by providing water to the city by bringing the "*Grand Vizier Water*".

The British consul and scientist Rycaut mentions the history and the importance of the Vezir waterway as follows:

[8] According to Raif Nezihi, Osman Ağa was the butler of Vizier Fazıl Ahmed Pasha. M. Münir Aktepe, ibid, p.151, Osman Ağa was mentioned as the deputy of Vizier Fazıl Ahmed Pasha in the İzmir City Guide, İzmir City Guide 1941, Meşher Printing House, İzmir 1941, p.134

[9] Raif Nezihi, History of İzmir, prepared by Erol Üyepazarcı, İzmir Metropolitan Municipality City Archive, First Edition, Part 6, İzmir 2001, p.8

"There is an aqueduct located on the streamlet behind the castle that provides water to the fountains in İzmir. This aqueduct was built by Vizier Ahmet Pasha in 1674. … Thanks to this new water line, not only was water provided for the new buildings (like Vezirhan) but 10 old fountains in the city were renovated, 73 new fountains were built and the water need of the city was mostly met. Thus, citizens of İzmir who needed to carry water into their houses from afar now had easy access to water. Like many cities on the great continent of Asia."[10]

It is known that there used to be different water resources besides the aforementioned waterways. The waterways that carry water to Ephesus and the waterways that bring life to the Metropolis, Foça, Aliağa and Bergama are important examples.

One of the most important sources besides Halkapınar[11] which has been providing water for İzmir since the Prehistoric era and was called *"Periklystra"* by writer Georgios Akropolites, was the *"Damlacık Spring"*. This spring has been an important water resource for the current Konak district for years. Hence, the water idly flowing from the spring was claimed by Nevşehirli İbrahim Pasha in 1720 and thus carried to the nearby mosque and soaperies.[12] It is beneficial to note that the fountains in İkiçeşmelik, which gave its name to the current district, derived their water from the Damlacık Spring.

[10] Georg Weber, ibid, p.46-47
[11] Ersin Döğer, Symrna of İzmir, From Paleolithic Era to Turkish Conquest, Publication of İletişim, İzmir Series 4, Istanbul 2006, p.171
[12] M.Münir Aktepe, ibid, p. 152 – 153

The historical İkiçeşmelik Fountain that was sourced from the Damlacık Spring.

Although there have been efforts in the use of water throughout the history of İzmir, the need of water in the city has increased parallel to the increasing number in population. Fountains built by foundations, especially in the Ottoman era, did provide a partial solution but unfortunately they were also soon inadequate. In the last quarter of the 19th century, as İzmir was becoming a metropolis with the increase of trade, the most important problem became water. Due to the primitivity of the distribution network, not only could the need of water of the public not be met and the water was not sanitary, but also the officers responsible for the protection of water resources collected money from the public alleging that the water pipes were broken and the waterways needed repair (in short by malfeasance), making water the agenda topic of İzmir.

The factors in question have required a definitive solution for this important problem for İzmir, a port city with a significant potential for trade.

The First Water Privilege in İzmir: THE İZMİR OTTOMAN JOINT-STOCK WATER COMPANY

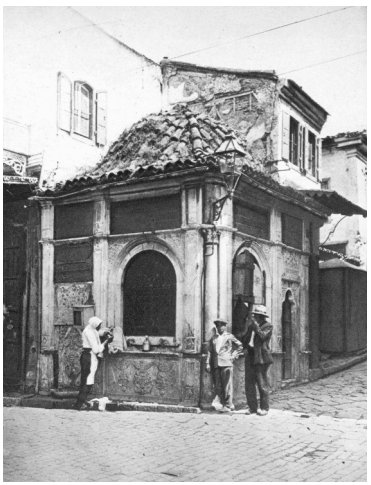
Lack of water in İzmir was not a new situation. As a matter of fact, Münir Aktepe mentions that an Armenian engineer named Narik made an attempt to open artesian wells in the middle of the 19th century in İzmir.[13] It could be assumed that either this attempt of Mister Narik did not get approval or he was unsuccessful in his attempt as the water problem grew increasingly.

As there were inefficiencies related with infrastructure at the end of the 19th century, epidemic diseases started because of waste water and citizens reacted to the local administrators.[14] In addition, the water cuts increased the effects of epidemic illnesses and citizens were fed up.

That situation in İzmir brought the water privilege into question and the problems that the public had made the issue more important. The promise of the people who defended the idea of the water privilege that even the upper neighborhoods that had no access to water would be able to have water gained great support from the public because they were fed up with cheaters, epidemic illnesses, and lack of water, especially potable water.

As the citizens supported the idea of the privilege, the Governor of İzmir Mehmed Kamil Pasha[15] initially granted the privilege to Mister İbrahim Niyazi, which was passed on to the Belgians, in order to mandatorily give water to Göztepe and Karataş and optionally to Bornova, Karşıyaka, Hacılar and Işıklar.

[13] M. Münir Aktepe, ibid, p. 136
[14] Hizmet,6 March 1888, 10 Septmber 1892, Erkan Serçe, Municipality in İzmir, From Tanzimat Reform Erat o Republic (1868-1945), Publication of Dokuz Eylül, First Press, İzmir 1998, p.68
[15] Governor Mehmed Kamil Pasha served as a Grand Vizier later on.



Public fountains used to have an important place to meet the water needs of the public.


COMPAGNIE OTTOMANE
DES
EAUX DE SMYRNE
SOCIÉTÉ ANONYME

Siège Social : SMYRNE

CAPITAL SOCIAL : 2,500,000 FRANCS
Porté à
3,750,000 FRANCS

Action de 500 Francs
entièrement libérée et au porteur
N° 01182

Un Administrateur,

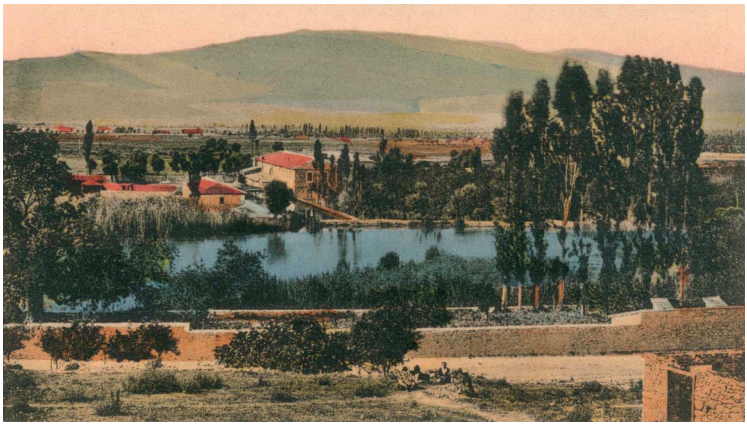
شركات مركزاري ازمير

01182 نومرو

The stock certificate issued in 1895 in the name of the İzmir Waters Ottoman Joint-Stock Company.

Belgian entrepreneurs, who accepted the distribution of water to public institutions, hospitals and municipalities and the establishment of public fountains on 20 locations decided by the Municipality, were granted the privilege with the registration of the Governor Mehmed Kamil Pasha on May 11, 1310 (1894) and were called the *"İzmir Ottoman Water Company"*.

After its establishment, the company found the necessary capital for the investment by selling its stocks. In other words, with zero capital, the company collected money from the citizens of İzmir and started the establishment of a facility where healthy potable could be obtained.



The facility established in Halkapınar by the Belgians who were granted the privilege

The team, with the leadership of contractor Delkurof, by completing a main underground tank, a pumping station in the center that works with steam, a water tank and the production of necessary pipes started providing water to the public fountains[16] in June 1898 and to other places in September[17].

The company preferred to distribute water to the lower neighborhoods, the people of where could obtain water from the Vizier and Osman Ağa fountains, instead of the upper neighborhoods where people had limited access to water. This only pleased the people living in the lower neighborhoods. Mister Ragıppaşazade Mehmed Ali, who lived in the neighborhood at the time, expressed his pleasure with this anecdote:

[16] Erkan Serçe, ibid, p. 127
[17] Erkan Serçe, ibid, p. 126

"They have allocated the Kamil Pasha Halkapınar water… it is unfortunate that the tasty water running from the Vizier, Osman Ağa and Hasib Efendi … due to the of lack of management were not properly flowing. The Halkapınar water, even though more expensive and fizzy than the water running from the Vizier, Osman Ağa and Hasib Efendi fountains, is worth the thanks as it reaches every house without any extra fee and does not require any dealings with the water distributors." [18]

As the rate of immigration in the city increased every year, the water need also increased and the residents of the upper neighborhoods, who were fed up with the lack of water, started to put pressure on the local administrators. In the end, when the situation came to a dead end, the Governorship needed to interfere. The Governor set up a Commission[19] under his presidency and started the works in order to solve the water problem of the upper neighborhoods. The Commission came to a solution by either talking to the representatives of the company or by taking initiative. As a result, the ones who would subscribe to the company would be determined and the company would guarantee to earn money.[20] However, things did not go as planned. The company started making difficulties after having provided the water until Bayramyeri. Thus, it was decided that would be provided to regions located on the upper parts of Bayramyeri with the vehicles of the Municipality.

By repairing the roads of the upper neighborhoods, the Municipality eliminated the excuse for the company to not distribute water. The residents of the neighborhoods were given hope for the distribution of water but the company, making up various other excuses, left the problem of water in midair.

[18] Raif Nezihi, ibid, 18th fascicule, p.6
[19] Ahenk 30 June 1910
[20] Erkan Serçe, ibid, p.127

And the water problem that continued for years was left as a legacy to the Republic era. The company had a big share in this legacy. The changing of the name of the company from the *"İzmir Ottoman Water Company"* to the *"İzmir Waters Turkish Joint-Stock Company"* during the Republic era was the only development the company made and due to the continuation of the problem by having shown no improvement with the decree of the Council of Ministers that entered into force in 1944, the privilege of the company was taken away and its activities were ended in İzmir.

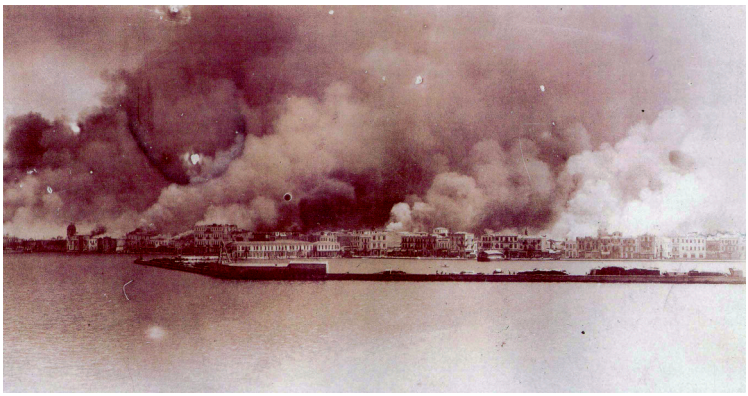
WATER POLICY DURING THE REPUBLIC ERA

İzmir came across a disaster known as the *"Big Fire"* on September 13, 1922 after its independence on September 9, 1922. A great part of İzmir was affected from the fire and turned into ruins. The disaster in *"Beautiful İzmir"* affected not only the upper structure but also the infrastructure of İzmir. Thus, in the Republic Era, the water problem of İzmir, the upper structure of which was partially destructed but the infrastructure of which was destroyed, was handled together with the infrastructural problem.

There is no doubt that it was not an easy task to reconstruct a city that came out of a war and had limited resources. Local administrators who were conscious of this started producing temporary solutions. Such as fixing the infrastructure and opening sand deposits to decrease the floods that happened especially in rainy the periods which were severely criticized by the citizens.[21]

It is also important to mention that the administrators of the Republic Era acted more strictly to the companies that were privilege holders. The first Mayor of İzmir during the Republic era, Mister Şükrü Kaya, indicated that if the company responsible for the renovation of the sewers did not do its duty, the Municipality would do the necessary renovations and take the money from the company.[22]

[21] Türk Sesi (Turkish Voice), 16 July 1923
[22] Erkan Serçe, ibid., p.270



The Big Fire that started in September 13 also destroyed the infrastructure of İzmir.

Although the local administrators during the Republic era allocated a big share of the budget to the water and infrastructure works, the problem could not be solved. Thus, Mr Hüseyin Aziz (Akyürek), during his Mayorship, had the *"Hoizler"* company make a sewage plan. According to the plan dated May 25, 1926, the sewages of the city would be separated into two parts starting from Kadifekale; the west part would be cleaned in the facility that would be established in Güzelyalı and the east and northwest parts would be cleaned in the facility that would be established in Alsancak.[23] Unfortunately due to high expenses and l financial impossibilities, this could not be realized.

Although a big amount of the budget was allocated and a large portion of the credit taken from İş Bank was dedicated to the infrastructure works, the problem has always been an important issue of İzmir.

[23] Erkan Serçe, ibid., p. 271

Along with the infrastructure services, the clean water problem continues to be one of the main agenda items in İzmir. In addition to the limited budget opportunities, the fact that one of the main water resources of the city, Halkapınar, is owned by a private company and that the Vezir and Osman Ağa waters are run by foundations, have prevented the problem from arriving at a solution. Therefore, the Water Act 831 that was published in the Official Gazette and came into power on May 10, 1926 facilitated the works of the local management. According to the law, it was set forth that all of the authority, as well as the assets, of the water foundations were to be handed over to the municipalities.[24] This also meant that the authority over Vezir and Osman Ağa waters and the subscription of 1350 customers were now in the hands of the municipality.

Governor of İzmir at the time, Kazım Dirik, who resolved the city's water problem in a vast scale.

During the time of Kazım (Dirik) Pasha, who was appointed as the Governor of İzmir in 1926, important steps were taken regarding the water problem of the city. First, the job of changing the old pipes, carrying the Vezir and Osman Ağa waters into the city, with galvanized pipes was sped up and with many lines going up to the upper neighborhoods, mainly Temaşalık ve İkiçeşmelik[25], the

[24] It is said in the first clause of the statute in question that: "The administration and provision of the water reserved for the requirements of the public in cities, towns and villages belong to the municipalities, where available, and, according to the Village Law, to the village councils, where there are no municipalities", Official Gazette, 10.05.1926

[25] Anadolu, February 8, 1927

water shortage of many citizens was resolved. It was also decided to build a water tank in Kadifekale in order to meet the water needs of houses that would be built around Eşrefpaşa and Mısırlı Avenue (current İnönü Avenue).[26]

Around this time, one of the main problems of Karşıyaka is also the water problem. Karşıyaka Municipality tries to solve it, however, just as İzmir Municipality, they encounter financial incapability. Several suggestions are made in order to resolve Karşıyaka's water problem and one that gained most recognition was bringing water from Halkapınar via a company. However, there are doubts as to whether the water company will accept this solution. Hence, the Member of Parliament representing İzmir at the time, Mr. Ahmet Enver (Özgen), wrote in the Anadolu Gazette, dated September 22, 1929:

"How can water be brought to Karşıyaka?..
Do you have money?
No!
What is your budget?
Within sixty, sixty-five thousand liras!..

Can you economize, for instance, fifteen thousand liras each year from this money?

Impossible. Because we can only provide the daily civic necessities of Karşıyaka with this budget!..

It is needless to say that there is no room for emotions in commerce. Particularly, the establishment you want to take over this job is a joint-stock company and this company can only be motivated not by force, definitely not by emotion, but only by profit. The investor

[26] Anadolu, November 14, 1929

will calculate that he first gets his interest on his money. His aim will be to first redeem his money, secondly to make sure the operation expenses pay for themselves and lastly to earn money…

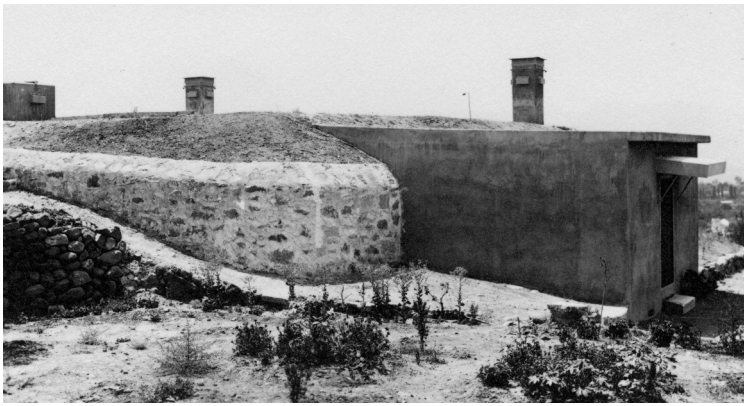
…In conclusion, there is no other alternative for Karşıyaka Municipality, or rather for the people of Karşıyaka, but to see this through."[27]

As it can be seen, the water issue has not only been a problem for İzmir center but also for its surrounding areas. However, with Karşıyaka becoming a part of the responsibilities of İzmir Municipality in 1930, "the water problem area" of the municipality, which had not yet resolved the water problem within the city center, extended.

In 1931, in order to manage all the water resources left to the administration of the municipality and to inspect works done under the responsibility of the private company, the Water Brach, under the department of Civil Works within the body of the municipality, was established. [28]The establishment of this branch is an important development not only to ensure to fasten the process to finding a solution to the problem but also to show how much importance the local management at the time gave to this problem.

These developments must have come up with results in a short time because the Pont Mousson [29] Company, which had won the Karşıyaka Water Project tender and had signed a contract with İzmir Municipality in June 12, 1933 had quickly finalized the works they started in February 1934 and by July 1, 1935[30], Karşıyaka had attained water.

[27] Anadolu, September 22, 1929
[28] Erkan Serçe, ibid. p. 233
[29] Erkan Serçe, ibid. p. 302
[30] Anadolu, July 2, 1935



The water tank where Yamanlar Water, the lifeline of Karşıyaka, is stored.

Meanwhile, relating to the Yamanlar waters to be stored and brought to Karşıyaka, the 1933 province statistics state the following:

"Delicious water, by way of healthy and modern plumbing, is being brought to the most beautiful and pleasant countryside of İzmir, Karşıyaka, from Yamanlar at a cost of 157,000 liras. The official grand opening of this water will be done by His Lordship the Prime Minister İsmet Pasha on August 27, 1934."[31]

Despite all these works, when, in the beginning of the 1940s, the water in Karşıyaka could not meet the needs of the people, a plan to bring support to the water from Vezir and Osman Ağa and Halkapınar waters were made. However, it was known that the company would make things difficult. Besides, the water problem of the upper neighborhoods in İzmir center was still not completely solved.

[31] Bülent Durgun, Economy of İzmir in the Early Republic Era 1923 – 1938, İzmir Metropolitan Municipality City Library, First Edition, İzmir 2012, p. 320 – 321

A fountain built during the Republic Era to provide water for the city.

In 1943 the municipality, with a 19.270 meter water road and 2763 subscribers, was trying to meet the needs of the people with the 171 fountains set up in various parts of the city. Under these circumstances, it was inevitable to monopolize the supervision and operation of all the water in order to find a solution for the water problem in İzmir.

Thus, according to the law accepted on June 5, 1944 and printed in the Official Gazette dated June 14, 1944, the İzmir Waters Turk Inc. has been expropriated by the Ministry of Public Works and handed over to the İzmir Municipality.[32]

This way, all operating rights of the water in İzmir were nationalized and all water and infrastructure services were monopolized.

[32] Official Gazette, June 14, 1944

THE ADVENTURE OF WATER IN İZMİR FROM ESHOT TO İZSU

İzmir Municipality, who took sole control over the city water administration as of January 1, 1945 with the "the purchase and handover of İzmir Waters Turk Inc. law" that took effect in June 14, 1944, has, on the basis of the 6th article of the said law[33], begun carrying out the water works within E.S.H.O.T., an abbreviation for General Management of Electricity, Water, Coal Gas, Autobus, Tramway Operations, which currently only gives services in transportation.

İzmir Municipality, who gained the operating rights of the Halkapınar Water after the expropriation of the company as well as an important water resource, started works to expand the system to a greater area. The water obtained from Halkapınar was enough to end the problems in the city. As a matter of fact, relating to the Halkapınar Water in the City Guide written before the expropriation of the company, Suad Yurdkoru, remarks: "The amount of water the springs provide are 10 times as much as the city consumes today." [34]

While İzmir Municipality was continuing to work to provide water for the city in the 1950s by way of infrastructure works, due to a hectic wave of "migration", a new disaster whose effects have lasted to date, starts rearing its ugly head from the beginning of 1960s onward: Gulf Pollution…

[33] The 6th article of the statute reads: "The temporary administration will, as of 1/1/1945, transfer the management and all related rights and duties to İzmir Municipality. Until a public management law is passed, the Municipality can manage the works of this services and all other water facilities in its duty as an annexed budgeted administration or an annexed budgeted joint administration provided that separate books are kept". Official Gazette, June 14, 1944
[34] Suad Yurdkoru, ibid. p. 133

A view of the 500 mm distribution line furbishing between the Halkapınar Water Factory and the Kadifekale Water Tank.

The increase in population and in industry in the 1960s necessitated the search for new water resources and to take new precautions to prevent water contamination. Due to this obligation, in 1969, the General Directorate of State Hydraulic Works made Camp – Harris – Massera Group prepare a İzmir Master Plan on the subject of new potable water resources and wastewater disposal. According to the "Camp Harris Massera Master Plan", clean water for the city was set forth to be provided from the Göksu, Göldeğirmeni and Sarıkız springs while it was suggested that the wastewater forming in İzmir be collected via an interception channel and purified in Çiğli and emptied into the mid-gulf by a deep discharge system.[35] This plan is important for being the stepping stone of the "Big Channel Project".

[35] Union of Chambers of Turkish Engineers and Architects, Chamber of Environmental Engineers İzmir Branch, İzmir Environment Status Report 2016, June 2016

On the other hand, another endeavor is the "Holder – Hydraulic Master Plan Revision" prepared in 1977-1981. According to this plan revision, it is set forth that the purified water derived from a conventional active sludge plant built north of Çiğli Airport will be conveyed to the Gediz River by way of a channel.

In the meantime, with the 34th ordinance of the National Security Council published in the Official Gazette on December 11, 1980 and the "The Law Related to Residential Areas Close to Big Cities to be connected to the Main Municipality" published again in the Official Gazette on December 8, 1981, the area of responsibility of İzmir Municipality expanded. This meant that aside from Bornova, Karşıyaka, Altındağ, Balçova, Buca, Büyükçiğli, Gaziemir, Güzelbahçe, Gültepe, Işıkkent, Pınarbaşı and Yeşilyurt Municipalities, the problems of a big area consisting Balatçık, Doğançay, Örnekköy and Uzundere villages were also handed over to İzmir Municipality. This also included providing fresh water and infrastructure problems. Therefore, ESHOT, who conducted the hydraulic and substructure works constituted new branch offices in Buca, Narlıdere, Bornova ve Karşıyaka in addition to the existing Center, Yenişehir and Eşrefpaşa branches.

The pollution of the Gulf was observed much more clearly in the 1980s and the bad odor deriving from it got ahead the water problem in İzmir and became the main issue. So much so that, aside from the above endeavors, a feasibility study was conducted by Dokuz Eylül University Department of Environmental Engineering and the Su-Yapı-Black & Veatch International Master Plan was prepared in relation to this study. A new locomotive was needed to resolve this problem, to make a infrastructural leap forward and to provide fresh water.

The Locomotive of Water in İzmir: İZSU

The growth in urban industry, population and increasing infrastructural requirements in the 1970s and the 1980s, necessitated the water administration branch within ESHOT to become a separate service.

It was decided that a structure similar to İSKİ, which was formed in İstanbul upon this necessity, would be constituted in İzmir and by the decree of the Council of Ministers dated March 11,1987, an institution to run water and sewage services was established within the body of İzmir Metropolitan Municipality; concurrently with the Ankara and Adana Metropolitan Municipalities.

The statements heralding the establishment of "İZSU" published in the Official Gazette edition 19411 on March 25, 1987 are as follows:

"General Management of Ankara Water and Sewerage Administration, General Management of İzmir Water and Sewerage Administration and General Management of Adana Water and Sewerage Administration have been established in Ankara, İzmir and Adana Metropolitan Municipalities."[36]

Having officially begun working in April 1, 1987 in accordance with the aforementioned law, the first board meeting of İZSU was held under the chairmanship of the Mayor of İzmir Metropolitan Municipality Dr. Burhan Özfatura and in attendance with General Sec-

[36] Official Gazette, March 25, 1987

Tahtalı Dam, one of the most important water resources of İzmir

retary A. Galip Halıcı, Deputy General Manager Atilla Koruyan and Vice General Manager Yılmaz Yaran.

Thus, the management of İzmir water which began at the end of the 19th century has, in almost a hundred years, obtained a true organizational structure.

Taking over all existing works, particularly the Grand Channel Project, İZSU continues to provide the water requirements and enhancing the infrastructure services of the constantly growing city. Especially Tahtalı Dam, completed in 1997 jointly with State Hydraulic Works, has become the most important resource of the city.

Regardless of the developments in potable water, the city has unfortunately not yet come to the desired infrastructural point.

Despite having largely done the wastewater network system within the city center, the pollution of the gulf could not be prevented due to the incompletion of the Grand Channel Project.

However, the 2000s have become a milestone for İzmir in this sense. Works completed in the leadership of İZSU in this period have made İzmir trustworthy by providing healthy water, comfortable with picnic areas on marsh areas, with clean streams, no trace of bad odor and most importantly it has made a city with a brand new vision with the aim for a "Swimmable Gulf".

A New Beginning in İzmir:

NEW DEVELOPMENTS IN THE WATER POLICY OF İZMİR IN THE MILLENNIUM

The 2000s was the period when the policy of İzmir developed remarkably. These developments can be separated into four parts; the Wastewater Developments, the Potable Water Developments, the Governance Developments and the Environment Developments.

Wastewater Developments:

The infrastructure investments in İzmir peaked in the 2000s. Certainly, the biggest success achieved in this period was the completion of the Grand Channel Project. Endeavors towards the establishment of the Grand Channel Project started with the approval of the Camp-Harris-Massera Master Plan in 1969, with a cost of 530 million dollars until the year 2000. Through the end of the project, it was not only an ordinary infrastructure project, but also

Meles Delta, which was once a marsh, was transformed into a recreation field thanks to the efforts of İZSU.

Çiğli Wastewater Treatment Plant has Turkey's biggest advanced biologic process with its capacity.

was an integrated project that has changed the features of the city by reviving the İzmir Gulf.

One of the most significant developments regarding the Grand Channel Project was the rehabilitation of the Meles Delta and its transformation into the most popular recreational area of İzmir. The Meles Delta, which used to be a lethal hydrogen sulfide gas generating marsh, is a prestige monument that represents the beautiful face of İzmir today.

Together with the developments such as the drainage of rain and surface waters, the maintenance of the sewage system, the cleaning of the tunnel duct systems, the stream remediation, the ground improvement activities and the completion of the main interception channels of the Grand Channel Project, along with the complete cut off of the waste water flow into the İzmir Gulf with the activa-


Scenes from the infrastructure works carried out by İZSU.

tion of the Çiğli Waste Water Treatment Plant, which has the biggest advanced biological process in Turkey, the infrastructure problems of İzmir were solved to a great scale in the 2000s.

Currently İZSU, which keeps the city and the Gulf safe through the treatment of more than 320 million m^3 wastewater in the 62 wastewater treatment plants, consisting of 38 biologic, 6 natural and 18 advanced quality plants spreading from Selçuk to Dikili and from Çeşme to Kiraz, is the pioneer institution in Turkey in the field or water treatment.

İZSU, planning to prevent potential floods in places where rain water flows into the sea by restructuring storm drainage lines, has developed a project that aims to decompose the integrated sewage systems in order to both increase the productivity of wastewater treatment plants and to reduce the workload of the sewage system. The project will relieve the urban infrastructure system by eliminating wastewater before it merges into the rainwater.

The number of operations towards solving the infrastructural problems in the settlements within the span of İzmir Metropolitan Mu-

A view from dredging operations in the İzmir Gulf.

nicipality's authority has been increased since 2014. A large part of the 186.12 km sewage system, which was completed in 2016, was allocated to these settlements.

İZSU, by implementing the Grand Channel Project to a large extent, realized its "Swimmable Gulf" dream through superstructure investments that are put into practice in integration with the infrastructure projects.

Hence, this achievement of İZSU has attracted the attention and won the appreciation of international authorities. The revival of the ecosystem and the generation of circulation, especially in the inner parts of the Gulf after the demolition of the Ragıp Pasha Dalyan in 2000, have facilitated the realization of this dream.

In the 1990s, İZSU took joint action with expert individuals and institutions such as Ege University, Dokuz Eylül University, TCDD and TMMOB, in order to prevent gulf pollution and realize the "Swimmable Gulf" goal.

Ecological life has been revived in the İzmir Gulf.

At the present day, within the framework of collaboration with these institutions, İZSU continuously monitors pollution levels and the liveliness in the Gulf and keeps it under control via the Oceanographic Monitoring Projects.

Besides an amphibious vehicle, which was used in İzmir for the first time, the MELTEM İZMİR sweeping ship and İMBAT İZMİR towboat of İZSU and DLH – KAZAR and ÇAMUR ships of the Seabed Sweeping Chief Engineering have performed significant roles in the cleaning of the Gulf.

In addition to this, the Homa Fishpond Rehabilitation Project, which was completed last year, has also provided great contribution to the liveliness in the İzmir Gulf.

İZSU will be speeding up its operations devoted to the İzmir Gulf, after obtaining the EIA approval for the "İzmir Gulf and Port Rehabilitation Project", which will be carried out in cooperation with TCDD. İZSU will be approaching one step closer to the "Swimmable Gulf" dream after the opening of the 13.5 km long and 8 m deep circulation channel in the northern axis of the Gulf.

A view from the works in Homa Fishpond, which is one of the most significant legs of "The Swimmable Gulf Project"

In addition to all these, a new infrastructure planning towards the rehabilitation of the current infrastructure systems and the streams in the city center will be put in to action by 2054. İZSU has been conducting prudential planning activities under the title of the "İzmir Metropolitan Area Wastewater-Rainwater and Streams Master Plan" with the intent of supplying the needs of our day with more modern methods and engineering applications.

Potable water Developments:

One of the biggest achievements of İZSU was on potable water. The potable water production, a significant problem throughout history, was solved largely thanks to the investments made at the beginning of the 2000s. The responsibility area of İZSU, which was 700 km^2 in the beginning of the 2000s, has increased up to 6200

İZSU, taking services to each neighborhood in İzmir, provides healthy potable water to the citizens of İzmir.

km^2 after the legislation of the "Metropolitan Municipality Law", law no. 5216, in 2014.

After the detection of the current potable water infrastructure within the boundaries of the expanding administrative area of the metropolitan city, projects aiming to decrease water leakages and replace galvanize and asbestos pipes in the network, were carried out within the scope of an investment program and conducted primarily in the most demanding and problematic areas in terms of potable water.

İZSU, by carrying the investments in the city center to new administrative areas in the city, is appreciated by the citizens of İzmir for its great public services. The service area of İZSU was expanded to 12.012 km^2 with the "Greater City Law", law no. 6360, which was issued in 2014. Ever since the legislation of this new administration model, İZSU has been supplying potable water to its 1.691.000

subscribers through the service network it has established.

Thanks to the 8 potable water treatment plants, the 3 arsenic refining plants and the 36 treatment plants in the rural areas, İZSU provides water that conforms to the standards stated in the "TS 266 Regulation Concerning Water Intended for Human Consumption" to its citizens by using underground and above ground resources.[37]

İZSU, taking water samples from hundreds of points every day, analyzes these samples in its laboratories with the first accreditation licenses in Turkey.

More importantly, in order to keep water quality in sanitary conditions, various parameters in the daily samplings are continuously being analyzed in the İZSU laboratories that are known to be the first public labs having accreditation licenses.

In addition to this, by making drilling works in places where water shortage is seen with the aim of meeting the needs of the citizens, İZSU has drilled more than 300 bores between the years2004 and 2015.

In spite of decreasing water resources and diminishing rainfall due to the drought that occurred as a consequence of global heating, citizens of İzmir did not have water shortage thanks to the water saving campaigns and the renovations in the water distribution networks.

[37] The 54 % of the total water provided to the citizens of İzmir in the first 8 months of 2016 was supplied from the underground deep-well resources as the remaining 46 % was supplied from the surface water resources.

A view from the constructions of the transmission line that will be carrying water from Gördes Dam to İzmir.

Moreover, the highest water production level in the recent years was reached in 2016. İZSU, investing in the future in terms of water supply, plans to supply the water demand of the city via the Bostanlı, Değirmendere and Çamlı Dams.

Among other remarkable works of İZSU, there are operations such as the planning of wells and dams, continuous maintenance and efficiently running of the Sarıkız, Göksu, Menemen and Halkapınar Deep wells, which are being used as underwater water production resources towards ensuring well efficiency since 1998; the distribution of the water of the Gördes Dam in Manisa-Gördes to İzmir, after its treatment in the Sarıkız Potable Water Treatment Plant.

As it is seen, not only is İZSU searching for new resources of potable water, but also gaining continuous success on this subject. On the

other hand, the potable water demand of the population living in the settlement units within the jurisdiction and responsibility limits of the İZSU General Directorate was estimated via projections made for the year 2050 and the methods and the amounts of future water supply were determined accordingly.

After the assessment of the current underground resources along with the current and developed surface water resources, the idea of using treated seawater in situations such as falling short of water resources, has gained importance. Such that, within the framework of the water supply targets for the next 35 years, it is estimated that more than half of the water demand in İzmir will be supplied from surface water, one third of it will be supplied from underground water resources, whereas nearly one tenth of it is supplied from seawater treatment plants.

İZSU, completing the network renewals of the 21 districts settled in its administrative field to a great extent, carries out the same operations in the other 9 districts connected to the Metropolitan Municipality with law no. 6360. Operations regarding the potable water policy are not limited to the network renewal and the water supply. Issues such as reducing water loss to a minimum, preventing breakdowns and repairing breakdowns in the shortest time possible are the main components of İZSU's potable water policy.

Governance Developments:

İZSU, while enhancing its personnel network also develops its technical equipment as to today's standards. İZSU has achieved to stand as an institution that provides confidence to its fellow citizens; not only by being an institution that gives clean water to urban dwellers, but thanks to its all kind of superstructure, particularly service structures, facilities, laboratories and technical units etc.

SCADA forms the backbone of İZSU's potable water distribution system.

İZSU, bearing to be the pioneer institution in Turkey in many aspects, closely monitors global technological developments and manages to make most of those opportunities to the full extent. The most important example to that is the water distribution system, namely "SCADA"[38].

This system, which was taken into service in 2000, provides full dominance on all water resources that constitute the infrastructure of İzmir's water distribution system, as well as the reservoirs and the pumping stations by making physical, chemical, electrical and positional value measurements.

The mentioned system, which in short can be called the "Optimum Processing", works with an operating system that has continuous monitoring, instant access and is economical and reliable. The sys-

[38] Supervisory Control and Data Acquisition

tem was developed by continuous updates parallel to the widening of its area of responsibility. It is so that this system has become İZSU's main artery with the benefits it provides in various aspects; including the quality control of the water, the efficient use of resources, staff efficiency, the detection of malfunction and precautions, the decrease in water leakage, the security of the fields and facilities as well as controlling the water distribution system from the center.

İZSU, the first institution that uses the "*Online Monitoring System*", has also managed to keep up to date thanks to its network. The institution not only makes use of information technologies in the most efficient way, such as the *Electronic Document Management System* and the *Geographic Infrastructure Information System*, in which the graphics and feature information regarding the infrastructure, superstructure, river routes, works of art and immovables of the administration are stored; but it also provides services that can be accepted as sort of a social responsibility project by enabling online payment for the visually handicapped subscribers. Even more, besides enabling the opportunity for the subscribers to pay their bills through their mobile phones and tablet computers, by providing them to reach to subscription procedures and various institutional information, İZSU has accelerated the operations, allowing citizens to save time.

Environmental Developments:

İZSU, as one of the leading institutions of İzmir Metropolitan Municipality, continues its investments by grounding them on ecological balance and with an environment friendly understanding. It can even be said that with the investments it has done so far, the institution has had not only great contributions for the community to access clean water, but also to access clean air.

A view of the coppice forest that İZSU formed in Tahtalı Dam Basin.

It is so that, İZSU has literally formed an İZSU Forest in İzmir by planting over 1 million trees[39] in the Tahtalı Dam Basin, the İnciraltı Urban Forest, the Bornova and Karşıyaka districts' dorsal sides and the Çiğli Sasalı region.

Moreover, following İzmir Metropolitan Municipality's commitment of decreasing the carbon foot print by 20%, as a party of the European Union Covenant of Mayors, İZSU has given weight on environmental investments. Gravitating towards alternative energy resources, İZSU, particularly by taking advantage of the Solar Energy Plants in the wastewater treatment facilities, targets both to protect the environment by saving energy and to strengthen its investments intended to provide service to the community by achieving financial savings.

[39] Some of those trees are: Pine, Red Pine, Blue Cypress, Black Cypress, Aleppo Pine, Iron Tree, Silverberry Tree, Oleander, Locust Tree, Daphne, Japanese Pear, Raisin Tree, Plane Tree, Sweetgum, Linden Tree, Cedar wood And Oak Tree.

Solar Sludge Drying Facility and Çiğli Sludge Digestion and Drying Facility in İZSU Havza Wastewater Treatment Facility.

In order to obtain alternative fuel or raw materials by drying the sludge formed in the wastewater treatment facilities, another example to İZSU's environmental investments is the establishment of Sludge Digestion and Drying Unit within the Çiğli Wastewater Treatment Facility and the Solar Sludge Drying Facility within the Havza Wastewater Treatment Facility. İZSU, initiating the operation of the mentioned facilities in 2014, will set an environmentalist precedent since it will also establish these very units within the other wastewater treatment facilities in the near future.[40] Again, in 2015, a research on the possibility of using the sludge obtained from the Sludge Digestion and Drying Unit in agricultural activities, even more the preparation of the "Sludge Management Master Plan" on this issue, gave hope regarding re-erecting mother-nature by "recycling".

[40] Only with Havza Solar Sludge Drying Facility, 2 thousand tons of carbondioxide emission in 20 months is prevented and saved almost 1.3 million Turkish lira of cost of transportation.

Let us not waste water when washing our hands, brushing our teeth, shaving and washing dishes. Water is Life

Lately, İZSU has accelerated its studies on creating alternative water resources by recycling wastewater. Thus, taking into consideration that 72% of clean water is being used in agricultural irrigation, a significant amount of saving will be accomplished.

Together with the drought in the years of 2007 and 2008, the "Water Saving Campaign" that was initiated by İZSU and spread throughout the country, saved a considerable amount of water and raised awareness. It can be said that the İzmir Metropolitan Municipality incentives for using the drip system in agricultural irrigation enable this awareness to last.

The İzmir Grand Gulf Project, conducted with the aim of a "Swimmable Gulf", can also be addressed. Yet, as a consequence of all these works which in essence constitute an integrated Recycling Project, the amount of oxygen in the water of the inner and center gulf's northern shores, which are facing losing their natural features due to the terrestrial based dangers, will increase and thus ecological balance will be re-provided by the help of the increase in the variety of fish. Hereby, the citizens of İzmir will be able to use the Gulf both for amateur and professional fishing. And while they will witness professional sports events realized on the Gulf of İzmir, they will also be able to swim in it; thus enjoying the privilege to live in a city showcasing the world the most unique instances of "Environmentalist" breakthroughs.

CONCLUSION

Water, the greatest blessing that "*MOTHER NATURE*" bestows upon living creatures, has witnessed the birth of civilizations. This is why geographies where water can be found and used efficiently have become the "*Cradle of Civilizations*", hosting very different cultures, just like İzmir.

İzmir, the name of which is in various mythological myths, especially famous with its Diana Turkish Baths where the current Halkapınar İZSU Facilities are established, provided the opportunity for mankind to take advantage of the great blessing of water thanks to the watercourses it possesses. Hence, the ruins of the ancient watercourses represent a cultural heritage carrying the signs of the past to today.

In the ancient times, in the Roman and the Byzantine eras and under the Ottoman rule, particular water resources of the city were used. However İzmir was demolished due to several earthquakes in the 18th century and during the city's reconstruction, watercourses were also considered and depending on the needs of the city dwellers, new water resources such as the Vezir and Osman Ağa Watercourses were brought to the city.

In the 19th century, especially with the railroad constructions and the increase of traffic in the port, İzmir started receiving migration; thus the issue of water scarce has risen. Just when this problem was getting worse, "water privilege" was applied.

Hence, water privilege that was granted to the Belgians with the establishment of the Ottoman Water Company, it at first created a positive atmosphere with the convergence of the lower neighborhoods, in which mostly the rich were settled, with water from

Halkapınar, however later on it was agreed that this development only partially solved the problem since the low-income upper neighborhoods' situation did not change.

This issue continued on until the Republic Era as a heritage.

Great works had been undertaken for solving problems regarding both the potable water and the infrastructure during the Republic Era. Unfortunately, this time another crucial problem arised: financial incapability.

While the private company continued to operate the Halkapınar water resource, local administrators tried to solve the problem with the Vezir and Osman Ağa water resources. Hence, the inadequacy of these water resources regarding the solution to the problem, the increasing water demand as a result of the addition of Karşıyaka within the borders of İzmir and the attitude of the private company which owned the privilege, all made it inevitable for the water administration to be monopolized. Consequently, the privilege of the private company was terminated and the administration of the water of İzmir was given to "E.S.H.O.T", a company established within the body of the İzmir Metropolitan Municipality.

Since January 1, 1945, E.S.H.O.T, having taken over the administration of water in İzmir, had maintained its works regarding both potable water and infrastructure until İZSU was established in April 1, 1987.

Being founded in 1987 within the body of the İzmir Metropolitan Municipality, İZSU, maintaining its continuous clean potable water and infrastructure services for 30 years with its investments, has accomplished to make İzmir a city worthy of the name *"Beautiful İzmir"*; and has enabled continuous access to clean and quality water for the citizens.

İZSU, aware of the fact that water represents the most important resource for the future as it is essential for health and is a requisite resource for food security, conducts "WATER SAVING" campaigns, awareness raising studies and combat with water pollution, announcing the good news that the adventure of water in İzmir, which has been continuing for thousands of years, shall continue on for thousands of years.

İZSU has developed its technological equipment to the most modern and most efficient equipments as a must of the Information Age, has managed to take advantage of all the opportunities that technology offers and thus has accomplished to increase both the speed and the quality of its services.

In addition, gravitating towards alternative energy resources, İZSU has regenerated nature by preparing projects on "recycling" and by executing planting works, just like the sludge digestion and drying facilities.

İZSU, reversing İzmir's ill fate with the Grand Channel Project, today has the pride to be the institution that made İzmir, in possession of the 25% of the wastewater treatment facilities within the EU standards of the country, the pioneer city in Turkey in this area by drawing the attention of the world with its "Swimmable Gulf" claim to İzmir.

In short, İZSU has achieved to be one of the model institutions of Turkey; with its mission which is built on providing continuous, efficient, productive and qualified potable water and wastewater services to the citizens of İzmir by overseeing human and environmental health, and its vision based on "*leaving a livable environment for future generations*".

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