



#akbelenesahipcik

Agrophotovoltaic Systems

Dr. Filiz YASAR MAHLICLI - Chemical Engineer IZSU General Directorate Energy Branch Manager

The Way to Use Renewable Energy Resources as Base Load; Energy Storage Systems

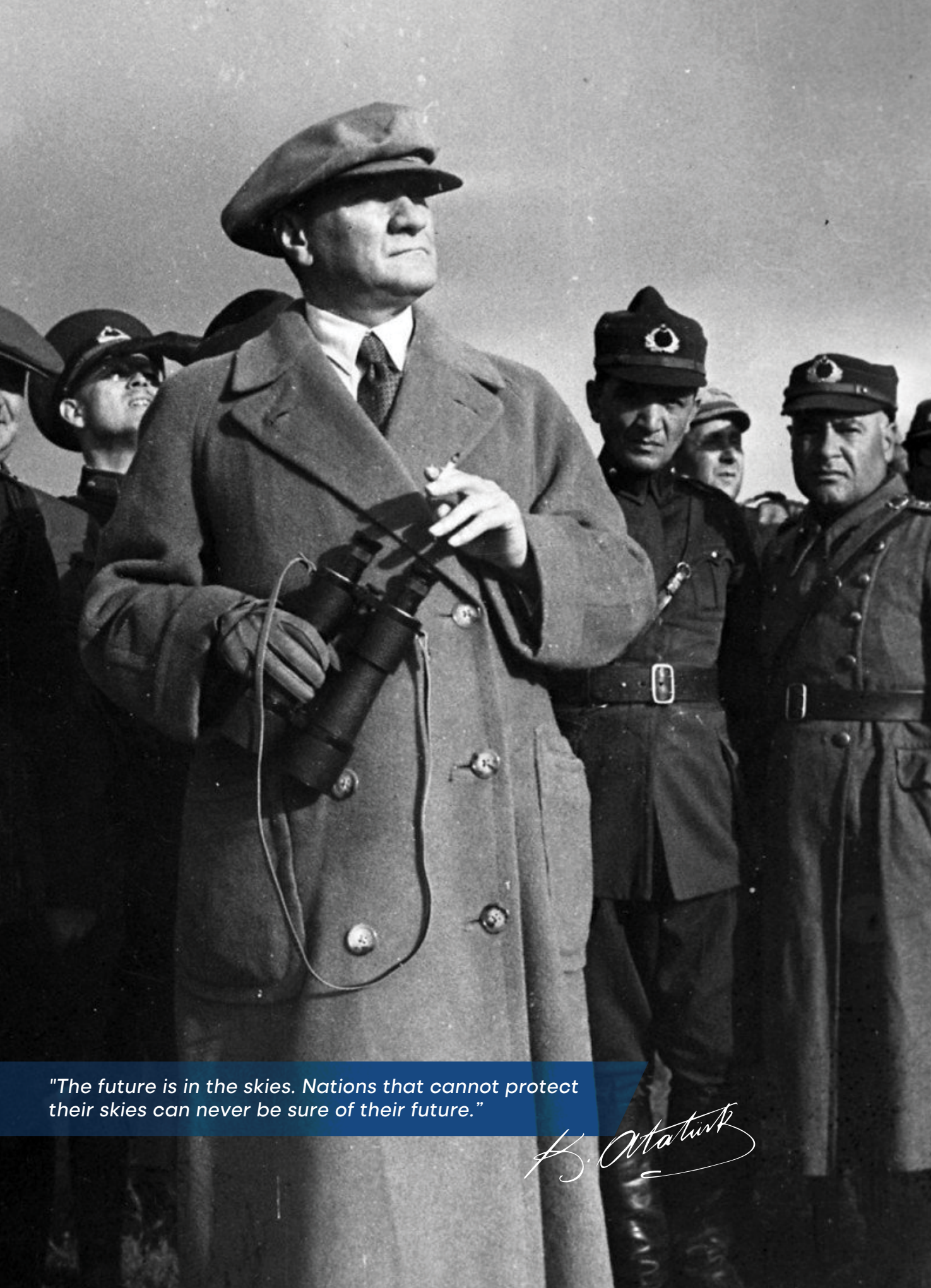
Elvan AYGUN - Sales Director Aha Energy Board Member

Our Treatment Technologies Partner Arbiogaz

Ahmet SENGUL - Civil Engineer Arbiogaz Çevre Teknolojileri A.S Deputy General Manager

We Will Build Izmir as a Sponge City

Alim MURATHAN - Geological Engineer Advisor to the Mayor of Izmir Metropolitan Municipality



"The future is in the skies. Nations that cannot protect their skies can never be sure of their future."

H. H. H. H.

Tunc SOYER

Mayor of Izmir Metropolitan
Municipality

We Will Leave a Great Bay for Our Children.

Dear Izmir Residents,

Izmir Bay is where the heart of Izmir beats, the reason for its existence. We continue our work without slowing down to leave this gem to our children in an immaculate way.

Because we recognize our responsibility to protect and develop this beautiful city and one of its most valuable assets, the Gulf of Izmir.

Of course, Izmir Metropolitan Municipality does not have a magic wand to solve this long-standing problem. But we continue the struggle to clean the bay on behalf of Izmir residents with full dedication and determination. Our goal is to make Izmir's shores swimmable again.



It is with great joy to announce that we have started construction of the fourth phase of the Cigli Treatment Plant to achieve this goal. With its fourth phase, our plant will be the largest capacity advanced biological treatment complex in Türkiye.

The construction of the fourth phase is only one pillar of our Great Gulf mobilization. In addition to the fourth phase, this mobilization, which covers a total investment of 11 billion liras, includes many other important investments such as the renovation of the first, second and third phases, the replacement of the discharge point of

the treatment plant and the rehabilitation of the treatment waste. With our mobilization, we are also building a new treatment plant in Karabaglar.

Izmir's gulf will continue to be the heart of this city in an immaculate way.

We are moving step by step towards this goal.

We will leave a vibrant gulf to our children. Very soon, the gulf will not be the bleeding wound of this city, but a source of pride. I believe this with all my heart.

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Editor-in-Chief

Ali Ercan TURKOGLU

Publication Editor

Acelya POLAT

Communication and Registrar

Zuhal DIZDAR

Registry and Control

Altan TURKUSAY
Sefika Cagla GUNDOGAN

News Officer

Altan TURKUSAY
Cem KANDEMIR

Graphic Design and Implementation

Busra GORMUS

Visual Collection

Murat INCEOGLU

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OWNER:

Acelya POLAT


RESPONSIBLE:


Zuhal DIZDAR

Correspondence Address

 Hurriyet Ave. No:18 F:2-4-5-6-7 Munir Birsal Plaza B Block Ismet Kaptan Neighborhood Konak/IZMIR

 (232) 411 77 00

 (232) 411 77 01

 info@izenerji.com.tr

Engineer msc A. Ercan TURKOGLU

Chairman of the Board of
IZENERGY INC.



Dear people of Izmir;

We are pleased to bring you the 13th issue of IZENERGY, our company's sectoral magazine.

Izmir Metropolitan Municipality continues its efforts to make Izmir a greener, livable and sustainable city by taking important steps in sustainability and environmental protection. In this issue, we focus on IMM's environmentally friendly projects for Izmir.

As in every issue, we continue to include all stakeholders of the city in our magazine. We endeavor to include academics working in our fields of activity, politicians developing policies, professional chambers, NGOs and other stakeholders and to deliver them to you.

In this issue, we include the articles of our valuable stakeholders in our voice of science and voice of the sector sections. Prof. Dr. Prof. Dr. Filiz Yasar Mahlicli's article titled "Agrophotovoltaic Systems" and aHa Energy Sales Director Elvan Aygun's article titled "The Way to Use Renewable Energy Resources as Base Load; Energy Storage Systems" are presented to you, our valuable readers. In addition, our solution

partner Arbiogaz Cevre Teknolojileri A.S. Deputy General Manager Mr. Ahmet Sengul's article titled "Technological Energy Storage Systems". Ahmet Sengul's article titled "Our Technological Partner Arbiogaz INC." is also presented to you.

We continue to publish IMM's Sustainable Energy and Climate Action Plan, which aims to reduce Izmir's energy consumption, promote the transition to renewable energy sources and combat climate change; the Green City Action Plan, which aims to increase the city's green areas, develop parks and gardens and establish environmentally friendly transportation systems; the Strategy for Living in Harmony with Nature, which aims to protect Izmir's natural resources, support biodiversity and promote sustainable agricultural practices, and the Plastic Waste-Free City Action Plan, which aims to find solutions to Izmir's plastic waste problem and reduce plastic consumption.

Also in this issue, Izmir Metropolitan Municipality Mayor Advisor Alim

Murathan's article titled "We Will Build Izmir as a Sponge City" is presented.

In June and July, very important developments took place for Izmir. The construction of Phase 4 of the Cigli Advanced Biological Waste Water Treatment Plant, prepared by the General Directorate of IZSU in order to prevent Izmir's odor problem that has been going on for years and to achieve the vision of a "Great Bay", has started. The facility, which was realized with scientific planning, was designed with a huge budget of 11 billion 95 million liras. In addition, within the scope of the EU Missions, the Climate Change Adaptation Mission was organized in Ronneby, Sweden. realized conference on behalf of the city of Izmir.

The 13th issue of our magazine is full and has titles that raise our hopes for the future. We are proud to be able to convey these beautiful works to you, our esteemed readers.

Until next issue, here's to clean, sunny, bright and healthy days together with the people of Izmir.

Dilek YAYLALAR ARAS

Financial Advisor,
Economic Scientist

IZENERGY INC. General Manager

Dilek Yaylalar Aras was born on December 10, 1978 in Bremen, Germany. After completing her primary and secondary education at Narlidere Oguzhan Primary School, she completed her high school education at Trade and Vocational High School. She completed her university education at the Faculty of Economics and Administrative Sciences, Department of Economics.

She completed her master's degree at Dokuz Eylul University Institute of Social Sciences, Department of Public Law, Department of Economic Law and her thesis topic was 'Personnel Service Procurement by Municipalities from Municipal Companies'. After this process, she obtained the title of Economic Science Specialist. She became a member of the Izmir Chamber of Certified Public Accountants with her Certified Public Accountant license and served as a member of the Contemporary Group Council of Certified Public Accountants.

Yaylalar Aras also took an active role as a member of Atatürk Thought Association. She started her career in the private sector as an Accounting

Officer in construction companies. Later on, she worked at Grandplaza A.S. as an Operations Supervisor in Izmir Metropolitan Municipality. In the process, she worked at Izelman INC. staff, Department of Public Works, Final Account Branch Directorate and Purchasing Department, Direct Procurement Branch Directorate.

In 2019, Mr. Aras was appointed as Assistant General Manager of IZENERGY INC. and in October of the same year, she continued her duty as Assistant General Manager in charge of Financial and Administrative Affairs at Izfas INC. While working as a volunteer in the Social Democrat Municipalities Association, she also attended many trainings and seminars on strategy and budget issues. She gave trainings on Cost Accounting and Professional Law in private classrooms.



By participating in a series of certificate programs, she gained knowledge and experience on "Effective Use of the Brain and Mind Mapping", "Unified Data Transfer System Applications with the Data to be sent to the Court of Accounts in Municipal Companies", "Electronic Tender", "Effective Resource Management", "Participatory Local Governments", "Legal Limit of Personnel Expenses and Alternative Finance Models" and "E-transformation". In June 2023, she took office as General Manager of IZENERGY INC.

NEWS FROM IZENERGY



ENSIA 2nd Network Meeting

The Energy Industrialists and Business People's Association (ENSIA), which was established to support companies producing equipment, technology and projects in the field of renewable energy and energy efficiency and to develop their capacities, organized the 2nd ENSIA Network Meeting in Izmir in line with its mission to ensure the formation, development and growth of the main and sub-industry of the renewable energy sector with domestic resources by observing the "Right to Cheap and Clean Energy" and to contribute to the formation and development of new technologies that are not available in Türkiye. Izmir Metropolitan Municipality Mayor Tunc Soyer, Izmir Metropolitan Municipality bureaucrats and Ali Ercan Turkoglu, Chairman of the Board of Directors of IZENERGY INC., participated in the program, which was attended by companies and institutions operating in the renewable and clean energy sector.

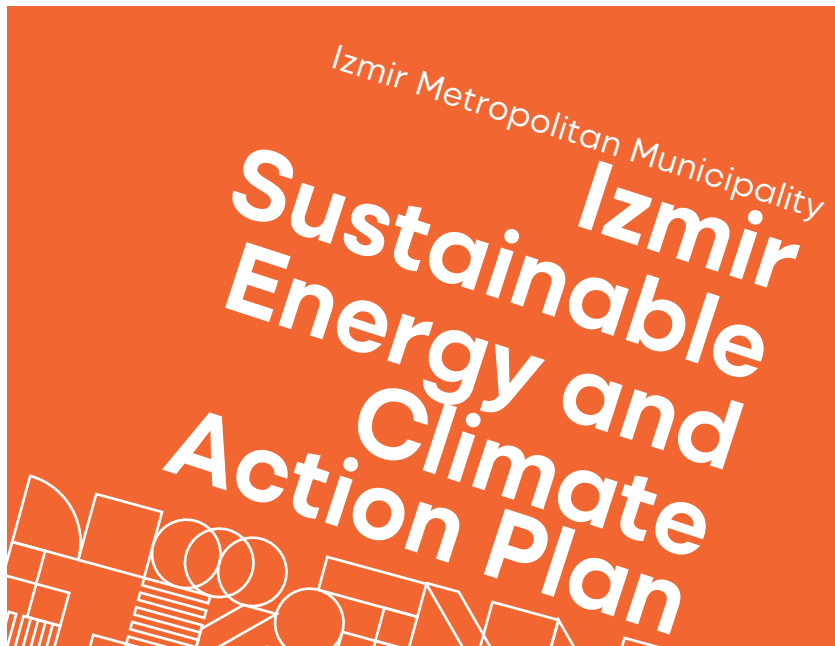


Alper TUYDES



Oystercatcher

The Eurasian oystercatcher is a shorebird that breeds in Eurasia and winters in Africa and South Asia. It is a remarkable bird with its black and white plumage, red beak and legs. The species breeds in the Gediz Delta in Izmir.



The following part is an excerpted verbatim from the Sustainable Energy and Climate Action Plan (SECAP). It includes actions for greenhouse gas mitigation and adaptation to the impacts of climate change, funded by the European Union and supported by the European Bank for Reconstruction and Development (EBRD), which is one of the works carried out by Izmir Metropolitan Municipality to leave a cleaner and livable city for future generations, such as the issue of energy and resource consumption for Izmir's urban sustainability and combating the climate crisis;

Table 25: Izmir GHG Emissions 2014

Sector	MWh	tCO ₂ e	%
Total For Izmir	62.591.032	21.869.346	%100
Building, Equipment/Site	43.591.022	13.698.579	%62,6
Municipality Buildings/Sites	178.364	74.691	%0,3
Tertiary Buildings/Sites other than Municipality	3.632.902	1.612.035	%7,4
Residential	7.670.683	2.725.513	%12,5
Public Lighting	199.645	98.744	%0,5
Industry	31.909.428	9.187.597	%42,0
Transport	16.268.206	4.309.141	%19,7
Municipality Vehicle Fleet	82.758	22.445	%0,1
Public Transportation (Municipality Buses)	597.525	162.260	%0,7
Public Transportation (Electricity Systems)	116.379	57.561	%0,3
Other Vehicles	13.243.752	3.484.648	%15,9
Transit - Bus Station	205.980	55.935	%0,3
Aviation	2.021.811	526.292	%2,4
Other Emissions	335.744	3.376.848	%15,4
Solid Waste Disposal	-	506.704	%2,3

decision was made to exclude the industrial, agriculture and aviation sectors on the basis that these are out of IMM's ability to control through policy mechanisms. This is in line with The International Local Government GHG Emissions Analysis Protocol (IEAP) by ICLEI and Guidebook 'How to develop a Sustainable Energy and Climate Action Plan (SECAP)' by European Commission Joint Research Centre.

The development of the SEAP accounted for IMM's short to long term strategic plans, and incorporated suggestions from stakeholder workshops, academics, the regional development agency, industrial and commercial associations as well as other public institutions, professional organizations and NGOs. The BEI 2014 GHG emissions inventory calculated for the SEAP is shown in the Table 25 below. Note that, although excluded from the 2014 SEAP, emissions from the agricultural sector have added to enable comparison with 2018 figures (presented in Section 4.2). The same methodology has been used to calculate enteric fermentation, manure management and irrigation emissions.

Table 25: Izmir GHG Emissions 2014 (continued)

Wastewater Treatment	-	112.021	%0,5
Wastewater Treatment Process CH ₄	-	22.463	%0,1
Wastewater Treatment Process CO ₂	-	56.884	%0,3
Wastewater Treatment Process N ₂ O	-	9.462	%0,0
Wastewater Treatment Process Without Nit./Denit.	-	164	%0,0
Wastewater Discharge N ₂ O	-	23.048	%0,1
Fugitive Emissions	-	468	%0,0
Process Emissions of Industry	-	1.355.049	%6,2
Livestock, manure management	-	1.236.548	%5,7
Irrigation	335.744	166.058	%0,8
Energy Generation	2.396.060	484.778	%2,2
Fuel Consumption for energy generation	2.396.060	484.778	%2,2

As shown in Table 25, Izmir's total GHG emissions were calculated as 21,869,346 tCO₂e for 2014. According to the table, building sector emissions account for approximately 62.6% of total emissions, with transportation accounting for 19.7%. Process emissions from industry account for 6.2%, solid waste disposal and wastewater treatment for 2.8%, and agriculture and animal husbandry for about 5.7%. Per capita emissions including industry, aviation and power generation are **5.32 tCO₂e**, while per capita emissions excluding industry, aviation and power generation are **2.17 tCO₂e**.

4.2. SECAP Update of the Baseline Emission Inventory

As seen in Table 25, the greenhouse gas emissions of Izmir province for 2014 were calculated as 21,869,346 tCO₂e. According to the table, the share of emissions from fuel and electricity consumption of buildings in total emissions is 62.6%. Greenhouse gas emissions from transportation account for 19.7%. Industrial process emissions account for 6.2%, while GHG emissions from agriculture, livestock and fertilizer management account for 5.7% and solid waste and wastewater treatment account for 2.8%. The per capita GHG emission value including industry, civil aviation, process emissions, energy production and fugitive emissions was calculated as 5.32 tCO₂e in 2014. The per capita GHG emission value excluding these emissions was calculated as 2.17 tCO₂e in 2014.

This analysis shows that fuel consumption in buildings and industry constitutes the largest source of emissions, representing around 55.4% of the total (Table 26). This sector is dominated by industrial buildings with a share of 56.7%, followed by residential buildings accounting for 25.9% of emissions from buildings (or 31.4% and 14.3% of total emissions respectively). Transportation is the second largest source of emissions with a share of 23.1%. Waste and wastewater emissions account for about 2.8% of the total, while agriculture and livestock represent about 8.2% (excluding irrigation). Energy production from fuel for own use accounts for 3.7% of total emissions, while irrigation accounts for 0.8% of the total.

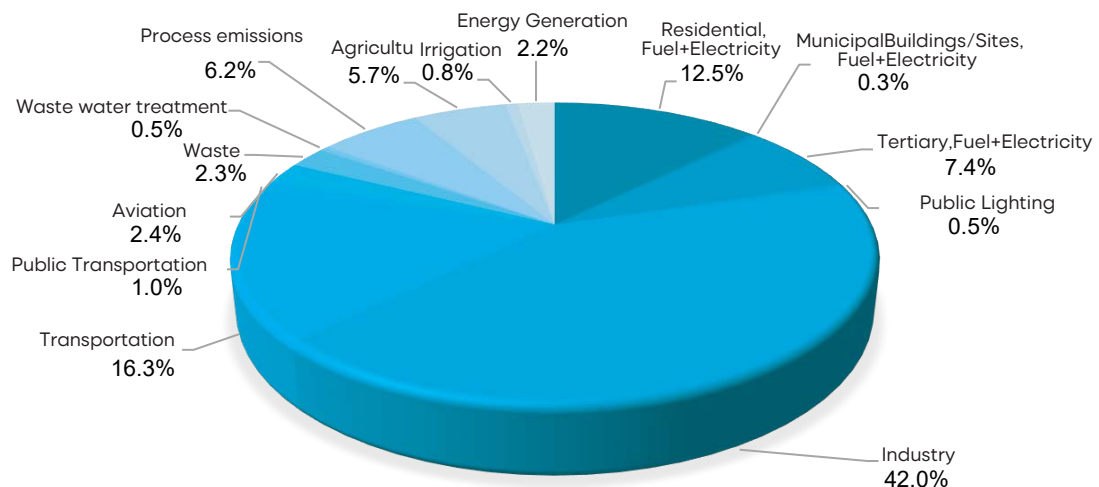


Figure 20: Izmir BEI 2014

Table 26: Izmir GHG Emissions-2018

Sector	MWh	tCO ₂ e	%
Total for Izmir	66.726.400	25.780.263	%100
Building, Equipment/Site	40.067.386	13.879.952	%55,4
Municipality Buildings/Sites	403.894	181.237	%0,7
Tertiary Buildings/Sites other than Municipality	4.808.950	2.128.887	%8,5
Residential	10.722.856	3.592.793	%14,3
Public Lighting	230.094	116.658	%0,5
Industry	23.901.592	7.865.616	%31,4
Transport	21.656.861	5.780.293	%23,1
Municipality Vehicle Fleet	193.8365	52.492	%0,1
Public Transportation (Municipality Buses)	683.162	185.137	%0,7
Public Transportation (Electricity Systems)	150.7165	76.413	%0,3
Other Vehicles (special, other public etc.)	18.819.2865	4.992.974	%15,9
Other Vehicles	175.0665	77.473	%0,3
Transit - Bus Station	1.637.825	725.835	%2,4
Aviation	384.752	1.465.606	%16,8
Other Emissions	-	595.319	%2,7
Wastewater Treatment	-	96.141	%0,7
Wastewater Treatment Process CH ₄	-	46.757	%9,4
Wastewater Treatment Process CO ₂	-	46.H8	%0,2
Wastewater Treatment Process N ₂ O	-	8.555	%9,9
Wastewater Treatment Process Without Nit./Denit.	-	134	%0,0
Wastewater Discharge N ₂ O	-	20.766	%0,1
Fugitive Emissions	-	1.519.992	%6,1
Livestock, manure management	-	2.059.089	%8,2
Irrigation	384.752	195.069	%0,8
Energy Generation	4.614.371	936.717	%3,7
Fuel Consumption for energy generation	4.614.371	936.717	%3,7

When calculating industry emissions national statistics have been taken into account for fuel consumptions and electricity. For process emissions only fugitive emissions of clinker production is calculated since there was not information for calculating other process or fugitive emissions from other industrial sectors. Fuel consumption for energy generation is related with only electricity generation for own use (autoproducers).

Izmir is the hub for the Aegean region, concentrating not only the industrial and commercial activities of the Province of Izmir but also naturally attracting neighbouring provinces such as Manisa, Usak and Denizli. The long-term promotion of road transport by national policies and the neglect of rail in passenger as well as commercial transport has exploded automobile use both within the Izmir Province, among towns and prominently in and out of Izmir but also to and from neighbouring provinces mentioned above. Private car ownerships for instance has increased by 25% during the past four years, much higher than population growth (Figure 21).

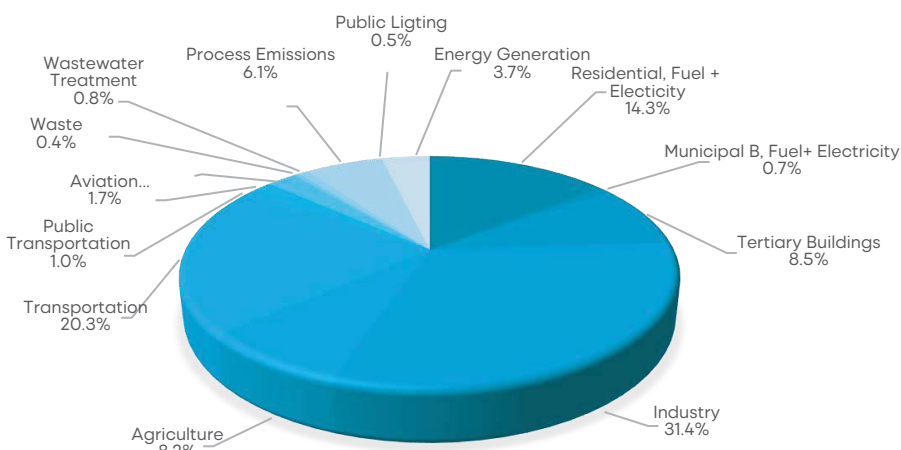


Figure 21: Izmir Emissions Inventory

According to Figure 21, when the greenhouse gas emission of 2018 is calculated, it is seen that the largest share is from industry with 41.4%. Other important greenhouse gas emission sources are transportation with 23%, housing with 14.3% and activities with 8.2%.

In Table 27, municipal greenhouse gas emission sources are given in detail.

Transportation is the largest source of greenhouse gas emissions with 61%. Approximately 50.7% of municipal GHG emissions come from public transportation. Municipal buildings and facilities are the second largest source of GHG emissions with 35.2%. Electricity consumed by IMM and its subsidiaries accounts for 32% of GHG emissions. Water pumping stations, drinking and wastewater plants account for 60% of IMM's electricity

consumption, while the rest is consumed by buildings/facilities.

The remainder of the municipality's corporate GHG emissions are generated by the municipal vehicle fleet (largely diesel), park and street lighting, and buildings/facilities. The municipality's institutional greenhouse gas emissions are detailed in Figure 22. Municipality's corporate greenhouse gas emissions are detailed in Figure 22.

Table 27: IMM Corporate Greenhouse Gases Emissions, 2019

Corporate GHG Emissions	MWh	tCO _{2e}	%
Buildings & Facilities	403.894	181.289	35,2%
Municipal	67.341	29.467	5,7%
<i>Stationary</i>	16.314	3.546	0,7%
<i>Electricity</i>	51.138	25.133	5%
Subsidiary	333.893	181.829	29,5%
<i>Stationary</i>	727.748	23.461	2,5%
<i>Electricity</i>	373.655	138.463	27%
Park and Street Lighting	157.938	15.232	3,7%
Transportation	1.027.714	314.842	61%
Municipal	92.855	25.098	4,9%
<i>Fuel-oil</i>	1.937	214	0,1%
<i>Diese</i>	91.973	39.252	4,8%
Subsidiary	102.133	27.877	5,4%
<i>Fuel-oil</i>	3.613	682	0,1%
<i>Diesel</i>	98.569	26.712	5,2%
Electricity	953	483	0,1%
Public Transportation	832.926	261.067	50,7%
<i>Diesel</i>	683.163	185.937	36%
<i>Electricity</i>	149.764	75.110	14,8%
TOPLAM	1.469.580	514.583	100%

According to the table, Izmir Metropolitan Municipality is responsible for serving more than 4 million people. IMM has many departments and more than 10 subsidiaries responsible for providing specific services. ESHOT is responsible for public transportation buses, IZSU for water and wastewater facilities, and Izmir Metro for tram and metro lines.

Figure 22 shows that according to IMM's corporate emission inventory, public transportation was the largest source of greenhouse gas emissions in 2018 with 50.7%. Electricity consumption ranked second in total GHG emissions with 32%. Municipality's vehicle fleet accounted for 10.3%, park and street lighting for 3.7% and fuel consumption for 3.2%.

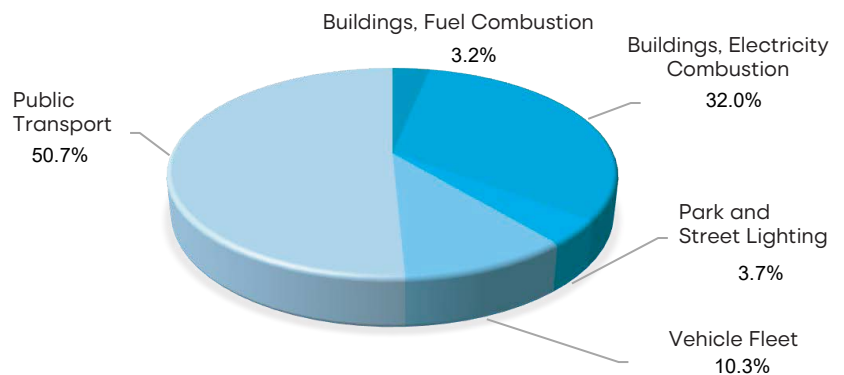


Figure 22: IMM Corporate Emissions Inventory (IMM + Subsidiaries)



For the first time in Türkiye, the European Bank for Reconstruction and Development (EBRD) provided a grant of €300,000 to Izmir for the preparation of a "Green City Action Plan". All stakeholders of the city were involved in the preparation of the Green City Action Plan. Excerpted verbatim from the Izmir Green City Action Plan, which was prepared with the participation of more than 100 participants from Izmir Metropolitan Municipality units, public institutions, non-governmental organizations, universities and professional chambers and approved by the parliament on December 16, 2020

Basket 3: Develop a more sustainable logistics sector

Industries: I.M

Izmir is an important logistical centre for Türkiye, with a strong network of airways, motorways, railways and marine routes. The Port of Izmir is particularly important as it has a central location between Western Europe and North Africa. Logistics can, however, have severe impacts on the environment, both directly from creating routes and dredging deep sea channels to more indirect greenhouse gas emissions. Izmir Bay is characterised as being heavily polluted from nutrients and organic material, with increased levels of chemicals and heavy metals in the water and sediments. Marine transport activities through freight, passenger

and commercial vessels in-parts pressure on marine biology due to pollution while the activities of Alsancak Port located within the Gulf are poorly monitored. This basket of actions seeks to reduce the environmental impact of logistics while protecting it as a key economic sector for the city. What is already being done?

Studies carried out in the current situation:

Logistics practices in Izmir are continuously improving. The city is increasing the capacity of its piers and docks, which result in increased imports and exports. This active and strong status of logistics in Izmir has resulting in multiple projects that have been undertaken or are currently underway, alongside the development of strategies to be adopted. Existing actions and strategies are as follows:

- The Green Port / Eco Port project in Türkiye fulfils Green port implementation programmes. Any sea port that meets the following certification requirements can voluntarily apply to the Ministry of Transport, Maritime Affairs and Communications in order to be certified as a Green Port²⁹ The certification requirements include: TS EN ISO 9001 "Quality Management System", TS EN ISO 14001 "Environmental Management System" and OHSAS 18001 "Occupational Health and Safety Management System",

- IIMM has prepared the Sustainable Urban Logistics Plan of Izmir (LOPI) that covers³⁰ districts and 1,285 neighbourhoods through the municipality, with the aim of ensuring that passenger and freight transport in the city to be carried out with respect to European standards and scientific criteria,

- Plans have been prepared to increase the container capacity of Izmir Port and dredge the channel in order to allow larger ships to berth. Furthermore, work to increase the capacity of the passenger port to accommodate more ships will make Izmir Port the largest cruise port in the Mediterranean,

- As part of "the Gulf and Port of Izmir Rehabilitation Project", monitoring studies and meteorological observations are regularly carried out around estuaries and inland, along with other efforts to improve the water quality,

- IZKA has prepared the Izmir Regional Plan 2014-2023. One of the objectives is to protect the sensitive ecosystems and biodiversity in Karaburun Peninsula and implement an integrated sea and coastal strip management,

- IZKA has developed the Peninsula Sustainable Development Strategy, in which the "Clean Coast - Clean Sea" objective is defined, further encouraging the constitution of coastal logistics centres and coastal fishing in appropriate locations. Another objective is to protect the Mediterranean monk seal and Audouin's gull living in their natural habitat in the peninsula, which are under risk due to high human action in the region³¹,

- IZKA has established a work program in two prospective development themes. These are Blue and Green Growth. Blue Growth actions aim to promote Izmir as the Mediterranean centre of attraction with the sustainable growth of the city based coastal activities. It focuses on the coastal economy, development and sustainable growth in the port sector and related sectors. The Outcome-Based Maritime Economy Program (DESOP) 32 has been developed in line with Blue Growth, with the following objectives:

- Enhancing the marine and coastal economy focusing on Blue Growth principles, and,
- Improving the maritime transportation and port services in Izmir

SOURCE: ²⁹Akgul, B 2017, Green Port / Eco Port Project, Applications and Procedures in Türkiye

³⁰<https://www.izmirloistikplan.com/>

³¹Izmir Development Agency (IZKA) Peninsula Sustainable Development Strategy, http://www.izka.org.tr/sites/default/files/2019-12/14_yarimada_kalkinma_strtejisi.pdf

Specific Strategic Plan Objectives of IMM 2020-2024

The following strategic objectives have been selected from the IMM Strategic Plan 2020-2024 as the actions developed around sustainable logistical practices:¹⁰

Priority Environmental Challenges Addressed

The following key findings from this study were presented at the Challenge Prioritisation Workshop, at which the Technical Committee and stakeholders were consulted to verify the findings and prioritise the challenges. This Priority Environmental Challenge has been identified as exacerbating the need to further address the development of more sustainable logistical practices within Izmir.

Action

The Green City action around more sustainable logistical practices across the municipality is summarised below (Table 18). A detailed description of this action is also presented.

Case Study, learning from other cities³⁴

Port of Rotterdam (PoR)

The Port of Rotterdam is the busiest seaport in Europe with annual throughput of more than 421 million tonnes of goods. Rotterdam is recognized as a European leader for cleaner technologies and efficient port practices. PoR is guided by its Port Vision 2030 prepared along with clients, government departments, knowledge institutes and societal organisations. From a sustainability perspective, Port Vision 2030 envisages that by 2030 POR will have the smallest ecological footprint in the world, achieved by sustainable transportation modes, clean fuels and efficient logistics chains. PoR has addressed environmental management through its corporate social responsibility program that is an integral component of its Business Plan 2006-2010, which was refined further in 2007 making sustainability a priority goal. PoR believes that a healthy environment offers competitive advantages.

Table 16: A summary of IMM Strategic Plan 2020-2024 objectives addressed by this basket

Strategic Heading	Strategic Goal	Strategic Objective
Nature - Sea and Coasts	5. Making Izmir one of the Model Cities of the World in terms of living with Nature	5.3 Izmir Bay and All Coasts and Seas will be Protected and will be Used Sustainably
Quality of Life	2. Making Izmir a Smart City with a High Level of Quality of Life and A Well Developed Transport Network	2.2 A Sustainable Transport System Will Be Created With a Harmonious Interaction Between Different Modes of Transport, Offering Different Options

Table 17: Priority Environmental Challenges.

State Indicator	Priority Environmental Challenge
Green Space, Biodiversity	There is a growing pressure of coastal developments which impart unintended environmental consequences on marine biology, with the construction of ports facilities.

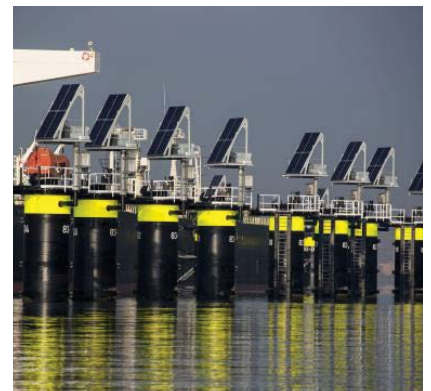
Table 18: Action within basket 3.

Action I.D	Action Headline	Action Type	Priority Challenge	Level of Impact of the Action	Indicative Cost
I.M	Develop more sustainable logistical practices	Plan /Strategy	Pressure of coastal development on marine habitats	Medium -Low	Design /Development: :8.000 € - 20.000 €

With growing trade volumes, PoR is expanding the port area by a land reclamation project called Maasvlakte 2, which increases port size by 20%. Maasvlakte 2 will promote sustainability by clustering businesses, whereby companies that can benefit from each other's residual products and residual heat are all within easy reach, making technologies such as district heating economically feasible. Secondly, wind turbines will be installed on all the solid sea defences to generate renewable energy.

Port Vision 2020 and 2030 have endorsed numerous strategies to reduce air pollution. PoR is contemplating using natural gas for barges between port and inland destinations. It is also developing a sustainability-shipping index to create financial incentives, such as lower fees for clean ships that comply with the index. PoR installed shore-based electricity facilities for inland shipping in 2007.

With Izmir being one of the most important logistical hubs in Türkiye with extensive port operations that are having unintended environmental consequences, this case study can be seen as a best practice example for minimising Izmir's logistical footprint, whilst also providing opportunity to the surrounding communities.



SOURCE: ³²Izmir Development Agency (IZKA) - DESOP 2020 [http://www.izka.org.tr/sites/default/files/2020-02/2020 calisma programi mavi buyume.pdf](http://www.izka.org.tr/sites/default/files/2020-02/2020%20calisma%20programi%20mavi%20buyume.pdf)

³³IMM Strategic Plan 2020 - 2024

³⁴Excerpt taken from article: Sustainable Development in the Maritime Industry: A Multi-Case Study of Seaports, Hiranandani,2014. (Inline citations were omitted) source: <https://www.rojadsatabank.info/Hiranandani.pdf>.

I.B: Develop more sustainable logistical practices											
Strategic Plan Objectives	<p>5.3 Izmir Bay and All The Coastal and Marine Areas Will Be Protected and Used Sustainably</p> <p>2.2 A Sustainable Transport System Will Be Created With a Harmonious Interaction Between Different Modes of Transport, Offering Different Options</p>										
Description	<p>A baseline study will be undertaken with a view of informing policy development around the uptake of more sustainable practices and the adoption of environmental and cultural factors in port operations (international and national logistics) and the development of coastal structures. The basic aims of these studies will focus on:</p> <ul style="list-style-type: none"> •An understanding of current port infrastructure, assets and management structure/ protocols. •Identify operation and smart-infrastructure improvements that can be made that improve the emissions and reduce the environmental impacts associated with port operations, enhancing their sustainability practices. <p>Opportunities to leverage the knowledge and best practice in regard to efficient/green operations will be sought through operational and management PPP options.</p>										
Rationale	<p>Izmir's geographical position caused the development of sea transportation and the city is a big hub for industry. Alsancak port located at centre, Cesme, Dikili, Seferihisar ports providing international connections via shipping, Aliaga port which is an industrial area with petrol transport and Alaybey shipyard where the military facilities are located. These ports play an integral role in city's transportation links, by helping create more sustainable logistical operations in the port, it will positively influence both national and international transportation from these facilities in regard to their environmental impacts, use of natural resources and greenhouse gas emissions produced.</p>										
Steps for Implementation	<p>For the baseline studies:</p> <ul style="list-style-type: none"> •Develop the scope and specification of the study, working with appropriate stakeholders. •Identify and secure the necessary funding •Procure a contractor to carry out the study.. 										
Type of action	Plan / Strategy										
Climate Change risks and/or											
Climate Change risks and / or	-										
Potential Emission Savings	Emissions of ports are not calculated separately from the city emissions; savings are not foreseen for port operations.										
Plan for delivery	<table border="1"> <tr> <td>Action owner</td> <td>IMM</td> </tr> <tr> <td>Stakeholders</td> <td>MoTI MoEnvU General Directorate of Maritime Affairs Professional Chambers District Municipalities Marine and Heavy Vehicle Logistic Sector Representatives International Ship Companies</td> </tr> <tr> <td>Financing options</td> <td>Municipal budget, IIBank, O&M PPP, private sector</td> </tr> <tr> <td>Revenue/ savings opportunities</td> <td>Savings opportunities will come from reduced energy costs, decreased pressure on energy networks and public health benefits</td> </tr> <tr> <td>Timeline</td> <td>2021-2030</td> </tr> </table>	Action owner	IMM	Stakeholders	MoTI MoEnvU General Directorate of Maritime Affairs Professional Chambers District Municipalities Marine and Heavy Vehicle Logistic Sector Representatives International Ship Companies	Financing options	Municipal budget, IIBank, O&M PPP, private sector	Revenue/ savings opportunities	Savings opportunities will come from reduced energy costs, decreased pressure on energy networks and public health benefits	Timeline	2021-2030
	Action owner	IMM									
	Stakeholders	MoTI MoEnvU General Directorate of Maritime Affairs Professional Chambers District Municipalities Marine and Heavy Vehicle Logistic Sector Representatives International Ship Companies									
	Financing options	Municipal budget, IIBank, O&M PPP, private sector									
	Revenue/ savings opportunities	Savings opportunities will come from reduced energy costs, decreased pressure on energy networks and public health benefits									
Timeline	2021-2030										

I.B: Develop more sustainable logistical practices (continued)

Impact measures	<ul style="list-style-type: none"> •All air quality indicators •Concentration of heavy metals in soils (zinc, cadmium) •Annual CO₂ equivalent emissions per capita •Annual CO₂ emissions per unit of GDP •Water Quality: Eutrophication •Sediment Quality •WFD Assessment: Seagrass
Estimated cost	<p>CAPEX: N/A: - OPEX: N/A: - Design/development costs: 8.000 €- 20.000 €</p>
Estimated benefits	<p>Health impacts: Public health – reduced pollution. Economic Development: Increased economic efficiency; economic growth; employment creation Social Inclusion: Access to basic services Environment: Reduced pollution, mitigation of GHG emissions.</p>
Existing Work Leveraged:	N/A
1/25,000 scaled IMM Environmental Plan Alignment	1. Izmir Bay

Basket 4: Commit to net zero energy and end the use of single use plastics in municipality buildings and encourage other organisations, business and institutions and follow IMM’s leadership

Buildings: B1.6
Solid Waste: SW1.10

It is important that despite an increasing population and strong economy we decouple growth from natural resource consumption. Through this basket of actions, IMM will encourage our community of businesses and institutions to commit to joining us in reducing their environmental footprint.

The 2018 baseline emissions inventory outlined in Izmir’s SECAP, demonstrates that Municipality Buildings / Sites produce a total of 181,289 tCO₂e from consuming a total of 403,894 MWh of energy, contributing 0.7% of the province’s total emissions. When adding this to the emissions associated to province’s tertiary and residential buildings, this contributes to 23.5% of total emissions.

This action recognises that as the Municipality, IMM have a limited remit over the emission reduction targets as well as actions taken to combat these emissions within certain sectors throughout the province, such a tertiary, residential and industrial buildings. The purpose of this action is therefore not to just reduce the emissions of IMM’s property portfolio, but also to take a leadership role in helping business and industry leaders, alongside Izmir residents, to reduce the remaining 22.8% of emissions from buildings.

What is already being done?

- Türkiye has adopted a strategy, which promotes a zero-waste management approach, efficient use of natural resources, landfill reduction, and increased recycling. Legislation introducing a ban on the free distribution of lightweight plastic bags came into force in January 2019 and attracted substantial public interest,

- In 2015 IMM became a party to the CoM, established under the European Commission, whose main objective is to promote and support the use of renewable and clean energy resources for a world that is fighting carbon dioxide gas and fighting global warming.

- IMM has prepared a SECAP in coordination with this GCAP, updating

the current SEAP emissions inventory undertaken in 2016, to sets a target of achieving a 40% reduction of greenhouse gas emission by 2030 against the 2018 baseline. The SECAP 2030 sets out actions including, but not limited to:

- Creating an inventory of high energy use buildings or sectors and promoting energy efficiency measures in these areas,
- Conducting studies on energy consumption and providing information about reducing greenhouse gas emissions to local and neighbourhood organisations,
- Ensuring that public institutions, especially municipalities, develop relevant databases and adopt greenhouse gas reduction measures,
- Energy efficient renovations in existing municipal buildings (heat isolation + lightening),
- IMM signed a protocol in October 2019 to join the "Plastic Waste-Free Cities Network" of the Worldwide Fund for Nature (WWF) within the scope of plastic pollution prevention works³⁵,
- According to the Zero Waste Regulation, District Municipalities of Izmir are required to start
- Implementing a Zero Waste management System by 31 December 2020.

SOURCE: ³⁵<https://www.izmir.bel.tr/tr/Haberler/izmir-plastik-atiklari-azaltmak-icin-ilk-adimi-atti/40950/156>

Izmir's Strategy for Living in Harmony With Nature

Excerpted from Izmir's Strategy for Living in Harmony with Nature.

Plantations resistant to Climate and Fire

LAYERS 234

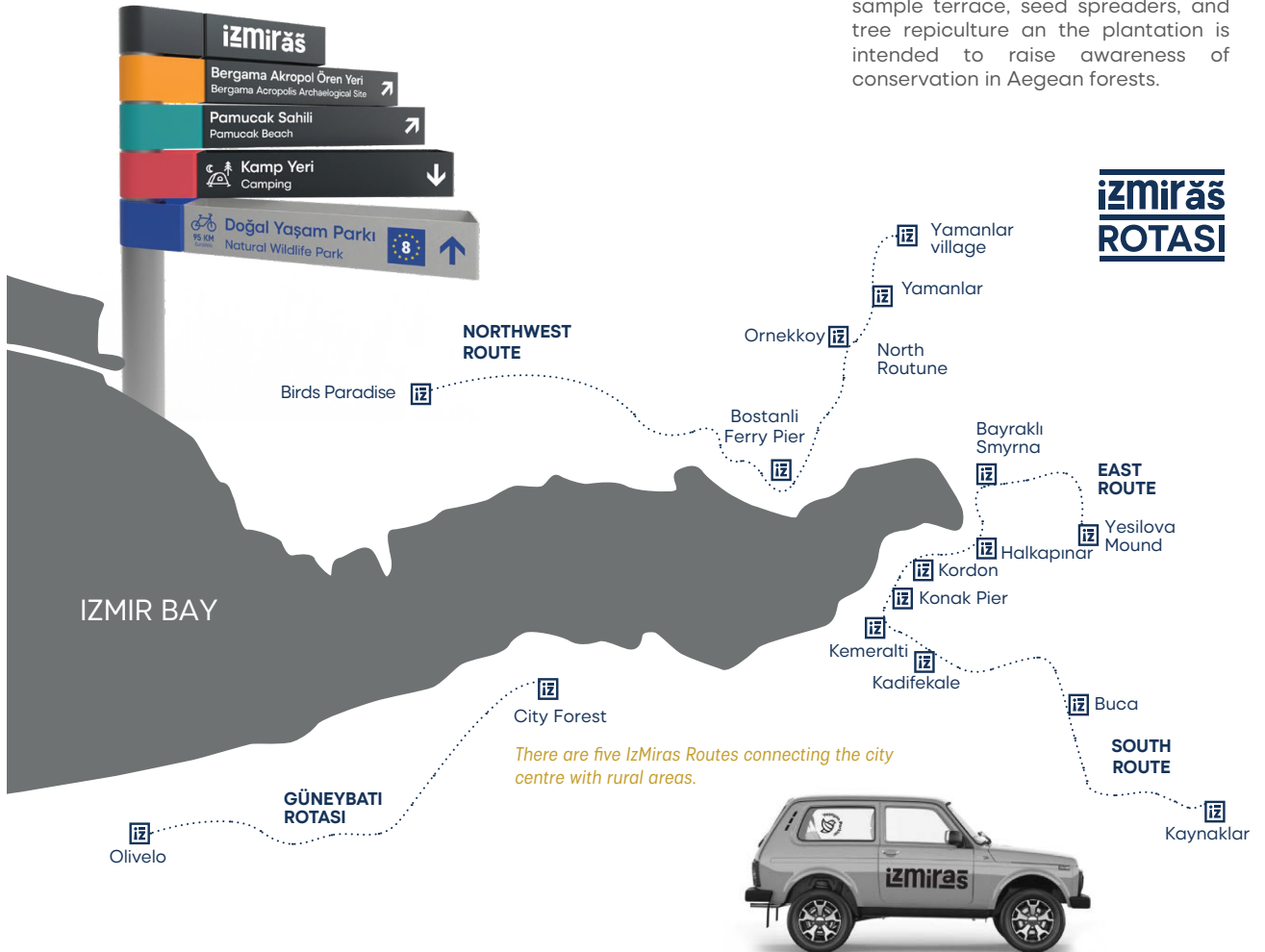
Integrational axes:

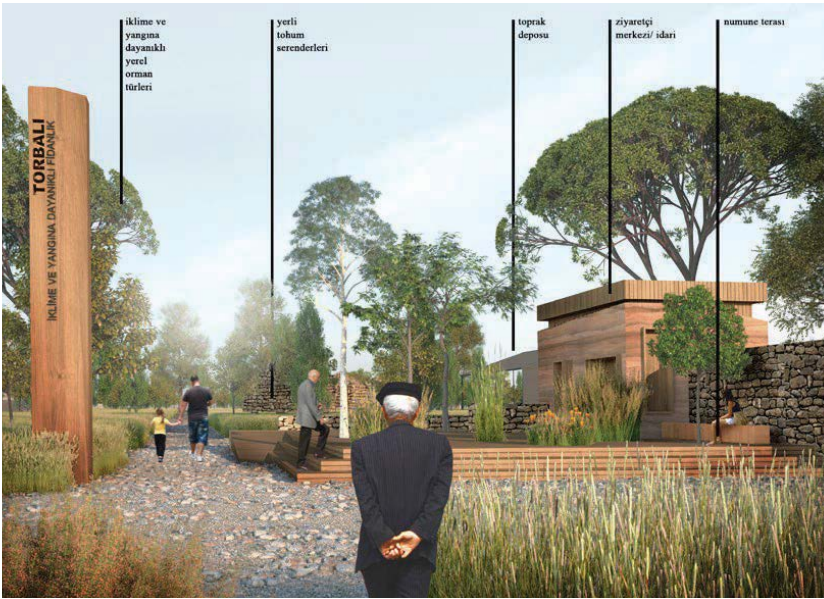
- ✓ Enabling nature to influence the city
- ✓ Ensuring the human impact on rural areas be in harmony with nature
- ✓ Encouraging a cyclical-feedback economy

Strengthening the bonds between rural and urban cultures

Explanation:

The reforestation methods used in forests destroyed by fire can be a cause of loss in fo species unique to the geographic area. At the plantation to be established in Torbali, 1 tree species will be grown with the aim of conserving the natural diversity of Aegeam rests. With its visitor's centre, sample terrace, seed spreaders, and tree repiculture an the plantation is intended to raise awareness of conservation in Aegean forests.





Fire-resistant trees nursery is being established in Torbali.

The Izmir Living Parks Project

LAYERS 234

Integrational axes:

- ✓ Enabling nature to influence the city
- ✓ Ensuring the human impact on rural areas be in harmony with nature
- ✓ Encouraging a cyclical-feedback economy
- ✓ Strengthening the bonds between rural and urban cultures

Explanation:

The Living Parks are the large-scale green areas located in rural and natural zones targeted for conservation on the outskirts of the city and connected to the city centre by IzMiras Routes. The living Parks bring together three types of land use normally treated as separate: ecological conservation, agricultural production, and recreational usage.

IzMiras Routes

LAYERS 1234



Integrational axes:

- ✓ Enabling nature to influence the city
- ✓ Ensuring the human impact on rural areas be in harmony with nature
- ✓ Encouraging a cyclical-feedback economy
- ✓ Strengthening the bonds between rural and urban cultures

Explanation:

Five green corridors are being prepared to create an uninterrupted connection between the city centre

and natural areas. These five routes are connected to each other by the IzmirDeniz coastal route encircling Izmir Bay. The IzMiras Routes comprise the Northern Route between Bostanlı and Yamanlar, the Southern Route connecting Kulturpark, Keme raltı, Kadifekale, and Kaynaklar Village, the Eastern Route between Bornova and Yesilova Mound (8500 years in 1 day), the North-Western Route connecting Bostanlı, Sasalı, anda the Gediz Delta, and the Southwestern Route between İnciraltı and Yelki.

These routes will not only provide a green corridor enabling nature to influence the inner city, but will also serve as uninterrupted hiking paths enabling city dwellers to access natural areas, and will further strengthen the economic and cultural bonds between the city's various regions.



The Living Parks are a park model where the potential contained in a holistic urban/rural, and natural/cultural structure is expressed and experienced. In these spaces, the functions of meeting the recreational needs of residents and tourists, supporting ancient agricultural production methods and the branding of local products, and raising awareness and promoting the conservation of local flora and fauna, are all fulfilled. While visitors are enjoying recreational activities in the rural areas on the outskirts of the city, they will also be able to discover ways of experiencing nature and ancient agricultural practices. By 2024, it is aimed to have established 35 Living Parks in Izmir.





Izmir joined the "Plastic Waste-Free Cities Network" initiated by WWF worldwide and involving 36 countries in December 2019 with the signing of the declaration of intent by IMM Mayor Mr. Tunc Soyer. Thus, Izmir became the second city in the Mediterranean after Nice to commit to being a plastic waste-free city by 2030.

In this direction, we are presenting you, our esteemed readers, the "Plastic Waste-Free City Action Plan" (excerpted verbatim) prepared as a result of the pilot applications initiated in Cesme.

2.2 To ensure that wastes are collected separately at source and delivered to the correct storage/recycling centers

The main negative impacts of the current situation in the recovery of packaging waste are reasons as social/behavioral and financial reasons can be grouped. In this framework, a 'Packaging Waste Recovery Management Plan' should be prepared and in the plan; geographical structure and socio-economic situation analysis, waste characterization, analysis and evaluation of the existing waste collection system should be carried out separately for the districts and the most efficient and sustainable packaging waste collection and recycling process scenarios should be created for each district. Thanks to this study, solutions suitable for the needs and predispositions of the citizens living in the regions can be proposed to ensure both recycling mechanism efficiency and economic benefit.

2.2.1 Preparation of Izmir Province Packaging Waste Recovery Management Plan	
Strategic Plan Objectives	5.1 Sustainable Waste Management and Recycling Mechanisms to be Developed
Definition	Ensuring that recycling of packaging wastes is carried out at the highest level throughout the province in an inclusive and efficient manner determination of the appropriate management system for the purpose of determining the appropriate management system and reporting the analysis, field and evaluation studies underlying this system. Preparation of the Management Plan
Implementation Steps	<p>1 Current Situation Analysis For the purpose of recycling packaging waste within the Izmir Metropolitan Municipality's catchment area;</p> <p>1.1. Determining the Legal Framework for the Management of Recyclable Packaging Waste Identifying the National Waste Management and Zero Waste Legislation Targets and determining their relationship with the Izmir Province Integrated Solid Waste Management Plan and defining the current targets specific to Izmir Province.</p> <p>1.2 Geographical Structure and Socio-Economic Situation Analysis From the perspective of waste generation, quantity and collection, in the 30 districts that make up Izmir</p> <ul style="list-style-type: none"> o Population o Geographical situation o Number of houses/compounds, housing estates, housing complexes, public institutions, shopping malls/markets; o Collection and sorting facility o Determination of the number, location and capacity of recycling facilities <p>Assessment of the socio-economic situation in densely populated neighborhoods. In the current system, street collectors operating illegally are active Determination of the number and location of interim depots in the regions.</p> <p>1.3. Determination of Waste Characterization Characterization and quantification of the packaging waste types defined in the scope for the 30 districts that make up Izmir, broken down into two main seasons, summer and winter,</p>

Implementation Steps	<p>1.4 Analysis of the Existing Packaging Waste Collection System To determine the functioning and problems of the existing packaging waste collection system in the district. Analyzing the existing packaging waste collection equipment in the districts in terms of number, physical condition, frequency of collection and accessibility by citizens. Analyzing the current system in terms of efficiency by considering the data on packaging waste collected with the current system.</p> <ul style="list-style-type: none"> o Number o Physical condition o Frequency of collection o Analyzing gaps in accessibility by citizens <p>Analyzing the current system in terms of efficiency by considering the data on packaging waste collected with the current system.</p> <p>1.5 Examples of Good Practices in Packaging Waste Recovery Identifying and explaining the examples of good practices in Türkiye and in the world with a similar structure, taking into account the current situation analysis of Izmir province.</p> <p>2 Creation and Evaluation of Scenarios</p> <p>2.1 Establishment of 'Packaging Waste Management Plan' scenarios in line with the following analyses by determining recovery targets in line with the current amount and increase potential of packaging wastes.</p> <p>2.1.1 Separate Collection System Analysis of Wastes at Source Scenarios will be created on the basis of the pilot districts to be selected, covering the entire district, for the collection system of wastes collected separately at source. For this scenario, collection and transportation systems compatible with the best practices will be evaluated by taking into consideration the existing physical location, socio-economic status, waste characterization data. Among these systems, door-to-door collection, recycling vending machines, waste-bank / mobile waste bank, in-building collection, collection from the street, collection from central points and other collection transport systems available in good practice examples will be taken into consideration. Mixed collection systems can be included in the scenarios to increase the efficiency of waste collection by conducting a zoning study to cover all recyclable packaging waste generated within the borders of the selected district. Maps showing which collection system is appropriate in which regions within the district should be included in the report. While conducting this study, the places within the borders of the district that should/can receive Zero Waste Certificate in accordance with the Zero Waste Regulation should be specified and included in the maps and scenarios in this way. For the waste collection scenarios to be proposed, the quality and number of equipment required to be present on site and the appropriate collection periods envisaged should be specified. Considering the number of equipment already on site, the number, quality and approximate cost of equipment needed for the proposed system will be determined.</p> <p>2.1.2 Packaging Waste Transportation System Analysis A study will be carried out to determine the transportation system in accordance with the collection scenarios created. In this study, both the Municipality and the contracted company's vehicles suitable for transporting the wastes specified in the scope of the selected District should be considered in terms of number, capacity, suitability for the proposed collection system (access to narrow streets, having apparatus compatible with the collection equipment, volumetric adequacy / waste compression feature, etc.), and the current situation and needs analysis should be made. Waste transportation routes should be based on the location of reasonably located waste collection/waste interim storage centers, collection and sorting facilities or recycling facilities where the waste will ultimately end up.</p> <p>2.2 Identify the comparative advantages and disadvantages of the 'Packaging Waste Management Plan' scenario alternatives.</p> <p>3. Recyclable Packaging Waste Management Strategies and Planning in Izmir in line with National Waste Management Targets Proposing The most appropriate administrative structure for the management of packaging waste in the city, Determining the methods and requirements for the collection and transportation of packaging waste,</p>
Time Frame	2022-2024
Action Owner	IMM (Waste Management Department)
Stakeholders	District Municipalities, Izdoga INC., Licensed Waste Collection Companies, Izmir Citizens

Agrophotovoltaic Systems

Dr. Filiz YAŞAR MAHLIÇLI
Chemical Engineer

IZSU General Directorate
Energy Branch Manager



As the world's population grows, the need for energy increases in direct proportion to the population. Using it wisely without wasting it is our duty to future generations. It is important to meet the energy need, which is consumed more with the increasing population, in a more economical way without harming the nature with renewable energy resources. Renewable energy resources have a strategic value in environmental, economic, social and political terms. Our country has a significant solar energy potential due to its geographical location. According to the Türkiye Solar Energy Potential Atlas (GEPA), the average annual total sunshine duration is 2,741 hours and the average annual total radiation value is 1,527.46 kWh/m².

According to the Brookings Institution, a US-based think tank, conventional solar power generation methods require 10 times more space than natural gas or coal plants that generate the same amount of electricity, and Solar Power Plants (SPPs) are allowed to be built on unproductive lands outside agricultural lands. Considering today's conditions, the need for nutrition and energy for billions of people living on earth is too high to be ignored. With the system called 'Agrophotovoltaic', which was developed precisely because of this need, both the technological energy needs and the nutritional needs of the society are met over the same land area, while reducing the use of agricultural irrigation (Figure 1).

The Agrophotovoltaic system was designed by Adolf Goetzberger and Armin Zastrow in 1981 and the results

were shared with the public in an article titled "Potatoes Under the Collector". The first prototype application was made in Japan in 2004. Research-development and legislative studies are actively underway to develop and expand the use of agrophotovoltaic systems.

One of the most important pilot studies on Agrophotovoltaic Systems, "Agrophotovoltaics-Resource Efficient Land Use: APV-Resole" project was carried out by Fraunhofer ISE researchers in 2011. This study has once again demonstrated that it is possible to run energy and agricultural activities from agricultural land at the same time and has been awarded Germany's prestigious "Germany - Land of Ideas" initiative award. Within the scope of the project, 4 different crops - wheat, potatoes, clover and celery - were planted under solar panels 5 meters

above the ground in an agrophotovoltaic pilot plant established on an area of 1.3 hectares around Lake Constance. Prof. Dr. Eicke R. Weber, Director of the Fraunhofer ISE Institute, commented on the results of this study: "The dynamic worldwide picture of solar energy installation has brought the need for a step towards innovative concepts as the use of space is increasing. Agrophotovoltaics both utilize agricultural land and help transform the global energy system," said Eicke R. Weber and Stephan Schindele, Project Manager at Fraunhofer ISE, "The agricultural sector faces the challenge of managing the rapidly expanding renewable energy sector and the competitive nature of farming and energy production. In this context, agrophotovoltaic systems have the power to shape the energy sector in the future with their trend-setting effect."

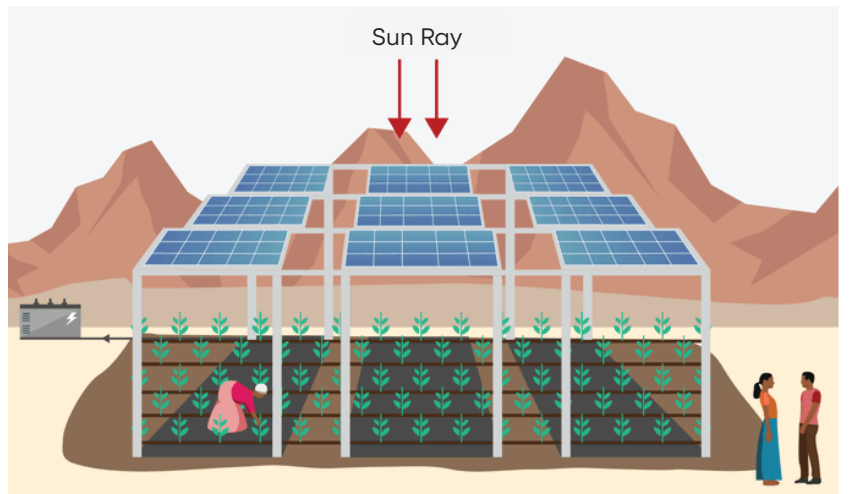


Figure 1. Agriphotovoltaic System Schematic Image



Figure 2. Application Example Visualization

The first pioneering study in our country was carried out by Enerjisa Production in 2022 in Komsukoy, Istanbul with a pilot plant with a power of 20 kW and a storage capacity of 24 kWh. Within the scope of the study, with the agrophotovoltaic system, perennial plants such as blueberries, which have high shade tolerance, and annual plants such as spinach and cabbage plants are grown in Komsukoy, and the electricity generated meets the entire energy needs of the connected devices, taking into account the operating needs.

Preliminary results of academic research on agrophotovoltaic systems have revealed another benefit of the system. It also shows that the shade created by agrophotovoltaic panels creates a microclimate with lower air temperature, where the soil remains more moist, thus reducing the need for agricultural irrigation. For example, measurements taken in a basil field in Chile where drip irrigation was applied showed that the soil under agrophotovoltaic panels was 29 percent more moist.

Academic studies and pilot applications on agrophotovoltaic systems in the world and in our country clearly show that the system creates value simultaneously in terms of agriculture-energy-water management. There is an important relationship between Agrophotovoltaic Systems and sustainability. Agrophotovoltaic Systems offer a sustainable green transformation solution for both agriculture and the energy sector. The contributions of Agrophotovoltaic

Systems to sustainability can be listed as: reducing dependence on fossil fuels and encouraging the use of renewable energy sources, reducing the water demand of plants and saving water thanks to the microclimate created under the solar panels, increasing productivity for plants that like shady environments and enriching crop diversity, preventing soil erosion and desertification by ensuring efficient use of agricultural land, and supporting rural development by creating a source of income for both agriculture and energy production.

Izmir Water and Sewerage Administration (IZSU) General Directorate consumes approximately 400 million kWh of electricity annually to provide healthy and uninterrupted drinking water and sewerage services to the people of Izmir, accounting for

approximately 2.47% of Izmir province's electricity consumption and thus its carbon footprint. Various renewable energy power plant investments and research and development studies are carried out in order to meet the electrical energy needs of the facilities operated by IZSU by using renewable energy resources, thus ensuring sustainable electricity supply at lower costs and reducing the corporate carbon footprint. In this context, with the Project for the Establishment of Agrophotovoltaic System in Menemen Emiralem Pipe Stockyard, it is planned to establish a pilot Agrophotovoltaic Power Plant with a capacity of approximately 250 kWe in an area of approximately 2,000 m² in total 1893 and 903 parcels in Kir Neighborhood, Menemen District, in order to pioneer and guide the development and dissemination of agrophotovoltaic systems in our province and in the Mediterranean basin. With the project, it is aimed to provide a part of the energy needs of the Authority from renewable energy sources and to bring the area, which was used as a pipe stock area before the project, into agriculture by applying the Agrophotovoltaic System in the area used as a Pipe Stock Area within the General Directorate of Izmir Water and Sewerage Administration. One of the main differences of Izmir agriculture, which Izmir Metropolitan Municipality continues to work with the vision of "A Different Agriculture is Possible", is that it focuses on the use of natural resources and provides significant savings in the amount of irrigation, thus combating drought. In this context, the application of agrophotovoltaic systems will contribute to the Metropolitan Municipality's goals for Izmir agriculture by reducing the water needs of plants and saving water thanks to the microclimate created under the solar panels.



The Way to Use Renewable Energy Resources as Base Load; Energy Storage Systems

Elvan AYGUN
Sales Director

Aha Energy
Board Member



Our world is no longer a habitable place due to fossil fuels. The most basic way to leave a habitable world to the next generations is to reduce the amount of fossil fuels. For this reason, we now need to increase the amount of renewable energy sources and use renewable energy sources as a base load. By using renewable energy sources together with energy systems and storage, we can create a base load, create a virtual quality grid and prevent power problems.

Uninterrupted energy is now among our most basic needs. As we have recently experienced in the earthquake disaster centered in Kahramanmaraş, uninterrupted energy is among our most important needs. The most basic need for uninterrupted emergency communication and coordinated work of emergency response teams is our need for uninterrupted energy. It is now possible to provide uninterrupted energy with new generation technologies.

With the development of battery technology, the parameters that will accelerate our transition to electric vehicles have been provided, but additional infrastructure work is required for fast charging stations for electric vehicles. The current infrastructure of our grids will not be strong enough to meet the needs of these vehicles. When we take the right measures today and correctly identify our future energy needs, the work to be done will not be wasted.

It is possible to use Energy Storage systems together with resources such as WES-SES-HES-BIO-MASS + GEOTHERMAL. Since we are working in the field of energy storage systems for long batteries with lithium iron phosphate, where many sub-elements are used together under the title of

LiFePO₄, our field experience in this field is quite high. When choosing energy storage systems, the quality of the battery we will use, the fact that it is water-cooled, and that it has real test reports while specifying the life graph are among the most important factors. In addition, the functionality of the PCS module we will choose will ensure that the quality and losses of the system are minimized. The faster the response time to the network, the less losses we will have. At the same time, the capabilities of the system are also very important. In the energy storage systems we offer, it is possible to use the device in 14 different modes. The most important of these modes are black-start, frequency regulation, reactive power compensation, active harmonic filtering, ramp control rates, etc.

As you know, with the recently published regulation, we will now invest using a minimum of 10 MWh energy storage system for Licensed SESs and

a minimum of 20 MWh energy storage system for Licensed WESs, the lower limits of the applications were determined by EMRA. Even if the technology of energy storage systems is unknown to the investor, the issues we need to pay attention to are actually clear. No investor has to know everything about a technology when buying a technology, but I think they should at least know what not to buy. Unfortunately, when the name of a technology starts to become a little popular in our country, countless companies sprout in the sector and everyone tries to claim that they can do this job. Energy storage systems require many years of network and technology experience. Bringing some components together does not mean producing technology, nor does it mean that the device will work efficiently. I would like to warn our investors not to waste their money while supplying this technology.



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ESSAHA Operating Modes

	Sending Mode	Frequency Support	Frequency Regulation	Peak Power Regulation	Power Limiting	Intermittent Resource Support	Generation Tracking	Ramp Speed Control	Dynamic Reactive Power Compensation	Load/Voltage Compensation	Active Harmonic Filtering	Voltage Regulation (AVR), Q (V) Sag	Voltage Flicker	Sitting System Recovery (Black Start) Functionality
Sending Mode	●	●	●	●	●	●	●	●	●	●	●	●	●	
Frequency Support	●	●	●	●	●	●	●	●	●	●	●	●	●	
Frequency Regulation	●	●	●	●	●	●	●	●	●	●	●	●	●	
Peak Power Regulation	●	●	●	●	●	●	●	●	●	●	●	●	●	
Power Limiting	●	●	●	●	●	●	●	●	●	●	●	●	●	
Intermittent Resource Support	●	●	●	●	●	●		●	●	●	●	●	●	
Generation Tracking	●	●	●	●	●			●	●	●	●	●	●	
Ramp Speed Control	●	●	●	●	●	●	●	●	●	●	●	●	●	
Dynamic Reactive Power Compensation	●	●	●	●	●	●	●	●	●	●	●	●	●	
Load/Voltage Compensation	●	●	●	●	●	●	●	●	●	●	●	●	●	
Active Harmonic Filtering	●	●	●	●	●	●	●	●	●	●	●	●	●	
Voltage Regulation (AVR), Q (V) Sag	●	●	●	●	●	●	●	●		●	●	●	●	
Voltage Flicker	●	●	●	●	●	●	●	●		●	●	●	●	
Sitting System Recovery (Black Start) Functionality														●

Elvan AYGUN

"Born in Malatya in 1992, Elvan Aygun started her university education at Isik University, Department of Psychology. Later, she graduated from Hasan Kalyoncu University, Department of International Trade. She completed her master's degree at Gaziantep University Marketing Department. Elvan Aygun started his business life at Sanko Holding and has been working

in the energy sector for many years. She continues to be a board member at AHA TECHNOLOGY INC and AHA ROBOTIC, which produce energy storage systems and active harmonic filters. She has developed his expertise in the seamless integration of renewable energy sources into the system and the storage of the generated energy. She has been

working in Türkiye for many years with his Finnish Partners Merus Power (ESS,SVC, STATCOM, AHF) and Japanese Partners Sanyo Denki (SANAGE, SANMOTION, SANUPS) and she is the Sales Director of these companies.

She is a board member of the Energy Industrialists and Business Association (ENSIA).

Our Treatment Technologies Partner Arbiogaz

Founded in Istanbul in 1985, ARBIOGAZ works in the environmental technologies sector. Choosing the right technology is the most important starting point in the design of environmental health facilities. As a company that has proven itself with nearly 500 reference projects and the right technology selection according to its fields of activity, ARBIOGAZ distinguishes itself from its competitors with its experience and reliability. Thanks to its successful facilities in more than 10 countries, ARBIOGAZ has an important role in the environmental technologies sector not only in Türkiye but also in the world.

According to their fields of activity, public and private sector customers;

- Domestic and industrial wastewater treatment,
- Wastewater recovery,
- Drinking water treatment and desalination,
- Waste dewatering, waste digestion, drying and solid waste processing,
- Provides turnkey plant solutions and operation services in the fields of odor removal and renewable energy production with the use of biogas.

Treatment of industrial wastewater requires a high degree of technical knowledge and industrial experience due to the fact that the pollution that occurs in industrial organizations varies from industry to industry. In parallel with the developments in environmental technologies, ARBIOGAZ applies proven, new and advanced treatment processes according to the needs of industries and the characteristics of wastewater.



Ahmet SENGUL
Civil Engineer

Arbiogaz Çevre Teknolojileri INC,
Deputy General Manager

ARBIOGAZ aims to offer the perfect combination of high treatment efficiency, low operating costs and easy operation for both small settlements and larger cities. Therefore, ARBIOGAZ applies aerobic and anaerobic biological treatment



processes, membrane bio-reactor (MBR), nitrogen and phosphorus removal, multimedia filtration and membrane filtration in addition to conventional processes.

ARBIOGAZ also designs and constructs waste dewatering and waste drying systems to minimize treatment plant by-products.

Considering that 97.5% of the world's water is found as salt water in oceans and seas and 2.5% as fresh water in rivers and lakes, and that 90% of such scarce fresh water resources are located at the poles and underground,

it is clear that the amount of fresh water available to humans and other living creatures is very small. In order to protect and efficiently use these limited water resources and to construct facilities that will provide the water quality required by human life

and industry, the company continues its success by designing and constructing city drinking water treatment plants, package drinking water treatment plants and industrial water preparation plants.

One of the biggest factors that increase the operating costs of treatment plants is the disposal of treatment waste. As with any waste, it is the greatest desire of every business to reduce the amount of treatment waste at the source and to minimize disposal costs. Although the selection of technologies that produce less treatment waste and even the selection of technologies that produce less treatment waste is the issue that should be examined primarily, the disposal of the waste should be done primarily at the source. In accordance with the laws and regulations of our country, the ways of turning the treatment waste into an economic value should be investigated and the choice of the technology to be applied should be made according to its feasibility.

Our company offers different solutions by using various processes for odor removal, which is becoming increasingly important today. Bad odor from wastewater and wastewater treatment plants is usually caused by H₂S, NH₃, SO₂, some volatile organic compounds (VOC) and mercaptans. In addition to these, it also offers special solutions for odors from industrial plants.



Partnership between ARBIGAS and DISPOSAL



Clean Environment Clean Gulf with IZAR

In line with Izmir Metropolitan Municipality Mayor Tunc SOYER's vision of a clean and sustainable environment, work on the strategy for life in harmony with nature, green city action plan, Izmir sustainable energy and climate action plan is ongoing. In line with these studies, in 2022, Izmir Aritma INC. and then IZAR INC. were established with our private sector partner Arbiogaz, with the aim of planning, management, continuous improvement, rehabilitation and modernization of environmental health facilities by researching new construction methods by preventing water, soil and air pollution and protecting the environment and natural resources.

IZAR INC. has started its activities by putting forward its mission to have confidence and a voice in the sector with quality, environmentally sensitive projects using renewable energy resources within the framework of its vision of a sustainable environment that respects nature.



IZAR INC. first started its activities;

In 2022, IZAR INC. received the subcontract for the revision of the existing 3 phases, which treat 604,000 m³ of wastewater per day with advanced biological treatment, from the business partnership that received the tender for the revision. Within the scope of the revision work of the existing 3 phases, the work started in August 2022 and continues rapidly. The revision of the existing 3 phases will be completed by our company as of January 2024.

In 2023, while the revision works were continuing at the Cigli wastewater treatment plant, the capacity was increased and the tender for the construction of the 4th phase was launched to treat 820,000 m³ of wastewater daily with advanced biological treatment. Our company has also subcontracted this work from the business partnership that won the phase 4 tender. Phase 4 works started in June 2023 and preliminary preparatory works for civil, mechanical and electrical works are ongoing. The 4th phase construction work is planned to be completed in a short period of 8 months and will be completed by the end of January 2024. In a very short time since its establishment, our company has completed both the revision of the existing 3 phases of the Cigli Wastewater Treatment Plant and the capacity increase.

It has accomplished great works by taking on the construction of the 4th phase, which will be the largest wastewater treatment plant in Türkiye. With the revision and capacity increase to be made at Cigli WWTP, vital progress will be made for the cleaning of the gulf by providing treatment and energy efficiency.

While IZAR continues to work on the agreements concluded, it also continues its work without slowing down by developing technological, environmentally friendly and energy efficient projects related to technological, environmentally friendly and energy efficient projects for new environmental facilities, rehabilitation works, and situation analyzes of existing facilities related to all environmental problems of Izmir.

We Will Build Izmir as a Sponge City

Developed by IZENERGY Water Resources Research and Application Center, the Sponge City Izmir Project is the first of its kind in Türkiye and is a water-focused circular green transformation project. With the Sponge City Izmir Project, it is planned to build Izmir as a sponge city within 5 years and reduce stormwater runoff in the urban area by 70% within five years. With this goal, which was put forward by Izmir Metropolitan Mayor Tunc Soyer at the project's presentation on December 26, 2022, our city will be prepared for a major green transformation with the water cycle.

The Sponge City Izmir project, which is a new stormwater management system to be integrated into the gray infrastructure system of a city for the first time in Türkiye, requires the development of pilot implementation projects for various areas of the city to enable the development of different implementation techniques and the monitoring of their performance.

With the Sponge City Izmir project, a pilot project of R&D quality will be carried out by our water resources research and application unit with the applications of green infrastructure techniques in the roads, streets, squares, cemeteries, refuges, parks, parking lots, market places, roofs, etc. of the city, to inspire the metropolitan municipality and the relevant units of the city, to raise awareness, and to



Alim MURATHAN
Geological Engineer

**Advisor to the Mayor of
Izmir Metropolitan Municipality**

prepare our city and our company for the future with sustainable innovative green infrastructure. The realization of these pilot projects will also be based on their economic and feasibility.

The team, consisting of experienced engineers, landscape architects and urban planners, produces solutions for all water-related problems, including water-oriented planning of Izmir, effective management of existing water resources, flood and drought events, which are increasing in severity with the changing climate, both in the center and rural areas of the city. The main mission of the unit is to effectively manage the underground and surface water resources of Izmir province, to carry out the necessary planning and project studies, to identify possible water-related problems such as climate crisis, floods, drought, etc. and to carry out the necessary studies by developing solution proposals.

Sponge City Izmir Projects Implemented During the Process

Within the scope of sustainable stormwater management, our Sponge City Izmir project, which is a stormwater management model that will make the city work like a sponge in order to make Izmir one of the sponge cities that

collect and accumulate rainwater in the world, was introduced to all Izmir residents on December 26, 2022, by saying "Another Water Management is Possible". At this promotional meeting, it was announced that 5,000 rainwater tanks and 10,000 rain gardens will be incentivized for 5,000 buildings and that applications are now open on the sungerkent.izmir.bel.tr web address.

Preparations have been completed for the "Kucuk Menderes Plain Rainwater Harvesting" project, which is the rural pillar of the Sponge City Izmir project shaped by the vision of Izmir Metropolitan Mayor Tunc Soyer to combat drought. The project was introduced to the public on January 28, 2023 in Odemis.

The project aims to ensure that the rainwater falling on the plain is stored underground without evaporation through rainwater harvesting, storage and groundwater recharge. The project will result in significant increases in groundwater levels. Thus, energy costs of farmers and producers will decrease and millions of liras will be saved.

Within the scope of the Sponge City Izmir Project, which is a first in Türkiye, a meeting was held on January 31, 2023 with the participation of all technical units of our municipality in order to provide rainwater management with green infrastructure techniques, to collect and manage rainwater, and information about the Sponge City Izmir Project and technical implementation guide was given at the meeting.

Alim Murathan, Advisor to the Mayor of Izmir Metropolitan Municipality and Geological Engineer, stated that the project was realized thanks to the vision of Mayor Soyer and said, "Our Mayor held the introductory meeting of the project on December 26th. Alim Murathan said, "We thought that everyone should be able to do the Sponge City pilot project and we prepared a technical manual. The manual is a guide. We are holding this meeting to share this guide with you."



Halkapinar Pond Revitalization Project

Bornova Camkiran Site from our First Pilot Application

One of the first pilot applications of the SpongeCity Izmir Project, Camkiran Housing Estate rainwater tanks collect rainwater falling on the roof of a building with a roof area of 300 square meters. With 2 tanks, each with a volume of 3 tons, residents harvest rainwater and actively use the harvested rainwater for garden irrigation and site/apartment cleaning.

We Started the First Rainwater Tanks Distribution in Bademler Village

We started our 5000 rainwater tanks incentive program in Bademler Village on March 22nd World Water Day and gave our first tanks. The reason why we started the rainwater tanks we distributed within the scope of our rainwater harvesting activities in Bademler village, which was the subject of the first international award-winning Turkish film "Susuz Yaz" (Dry Summer) filmed in 1963, is the struggle of Bademler citizens who know the importance and value of thirst and drought. This is such a struggle that it has made its voice heard all over the world by witnessing and struggling for the right to water, water ownership and the value of thirst.

Rain Collecting Village, Karaburun/Sarpıncık

The Sponge City Izmir project is a project developed by Izmir Metropolitan Municipality IZENERGY Water Resources Research and Application Center to raise awareness and inspire rainwater harvesting based on the requests for rain tanks for rainwater collection by the residents of Karaburun Sarpıncık Village within the scope of rainwater harvesting studies.



We can treat rainwater and use it in our homes and buildings

As part of our Sponge City Izmir project, we are taking our efforts to harvest rainwater, which we started with the distribution of 5000 rainwater tanks, one step further. We will be able to treat the rainwater we will collect in our rain tanks and use it in our homes and buildings. As Izmir Metropolitan Municipality, we realized our first pilot project in Gaziemir Fire Department.

We collect the rainwater harvested from the roof of Gaziemir Fire Brigade building in our rain tank and use it in our building through a treatment unit. The rainwater, which we have brought to drinking water standards after treatment, is used for personal use in the kitchen, toilets and showers in our fire brigade building. At the same time, we will store the water we harvest from the roof of the Fire Brigade vehicle park in our fire pool and use it as intervention water in fires. With this project implemented in our building, where 24 people work in three shifts a day, a total of 222 tons of water and approximately 7000 TL can be saved annually.



Our Pilot Projects Planned by Izenerji Water Resources Research and Application Center within the scope of R&D;

- Bornova Rain Park Project
- Buca Betontas Marketplace
- Ecological Ponds
- Rain Stops
- Buca Sponge Road
- Bornova Metro Station Refuge Work
- Sirinyer Rain Street Project
- Blue-Green Corridors on Bornova Stream and Creek Express
- Halkapınar Pond Revitalization Project

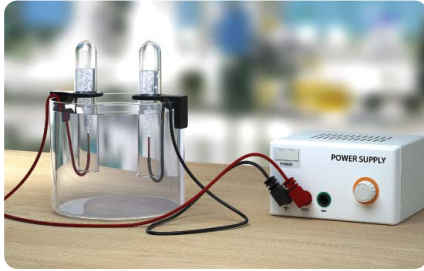
4 Steps to Green Hydrogen Production

Hydrogen, which has been frequently encountered in the energy sector in recent years, has different names such as gray, blue, turquoise and green depending on the energy source and production method used in production. Green Hydrogen is seen as the energy source of the future because it does not use fossil fuels in its production and emits only water vapor when burned.

In a study conducted by SHURA Energy Transformation Center in 2021, considering Türkiye's green hydrogen demand potential, approximately 5% of the current total final electricity consumption can be substituted with hydrogen. Türkiye has a green hydrogen potential of approximately 4.6 Mtoe per year.

Clean Energy Production

Unlike other types of hydrogen produced using fossil resources, Green Hydrogen is produced using renewable energy sources such as wind, solar and biomass. The energy obtained is used to meet the energy needed during the electrolysis of water.



Electrolysis of Water

Hydrogen can be produced by different methods such as pyrolysis, carbon capture, steam-methane reforming. Green hydrogen is produced by electrolysis of water. The electrolysis device allows us to obtain oxygen and hydrogen by separating water into its molecules.

Storage and Transportation

Hydrogen gas is compressed and stored up to 700 bar. The stored gas is transported to the user by tanker, ship or pipelines. Existing natural gas pipelines can be an important alternative for the transportation of hydrogen, as it is possible to mix a certain amount of hydrogen with natural gas. In addition, it will be possible to transport 100% hydrogen with new pipelines that can be established.



Usage

Green hydrogen can be used as fuel in transportation vehicles, industry and households. It offers a combined solution between growing and sustainable renewable electricity generation and hard-to-electrify sectors such as steel, cement, chemicals, long-distance road transport, maritime transport and aviation.

Izmir in Brussels

Mayor of IMM and member of the Board of Directors of the World Union of Sustainable Cities (ICLEI) Tunc Soyer traveled to Brussels for the Board of Directors Meeting of ICLEI, a global network of over 2,500 local and regional governments focused on sustainable urban development. He explained Izmir's international efforts for sustainable cities. Soyer made a detailed presentation about Izmir's international activities in the field of sustainability and resilience and its pioneering role in the face of the global climate crisis. Izmir's practices on "circular culture", United Nations Sustainable Development Goals and Voluntary Local Assessment Reports were prominent topics on the agenda.



Urban Development Firsts Signed in Paris



IMM and the French Development Agency (AFD) signed an agreement in principle to work together on investments in sustainable urban development in Izmir. The agreement, which is important to strengthen Izmir's efforts to become a green, sustainable and inclusive city, was signed by AFD Global Executive Director Philippe Orliange, French Ambassador to Türkiye Herve Magro and IMM Mayor Soyer. The agreement, signed during Soyer's visit to Paris, aims to promote future joint projects in various areas of urban development such as water and treatment, transportation and waste management.

Under the Leadership of TARKEM, Kemeraltı will Step into the Future

"Izmir Historic Kemeraltı Real Estate Investment Fund" was established to carry Kemeraltı, which is on the way to UNESCO World Heritage Site, to the future and put it on the world showcase. The fund, of which Soyer is the chairman of the board of directors, was established under the leadership of TARKEM (Historical Kemeraltı Construction Investment Trade INC.). With the cooperation of Re-Pie Portfolio Management Company, the Fund, whose project size is targeted at one billion dollars, changes the face of Izmir and offers tax-free investment opportunities to investors. Stating that a vibrant Kemeraltı with its restaurants, cafes, hotels, pensions and tradesmen that will live 24 hours a day is the first priority of IMM, Soyer expressed his belief that the Ministry of Culture and Tourism will also contribute to the work.



Protect Akbelen!



In these days when we are feeling the effects of the climate crisis and the need to reduce the use of fossil fuels is being discussed all over the world, the Akbelen Forest in Mugla İkizköy was opened for mining and the trees were destroyed. Mr. Soyer reacted to the issue on social media. Tunc Soyer stated, "Nature is our arm and our wing, you cannot break our arm and our wing in this way. Nature is our home. You cannot deprive any life from its home. We appeal to your conscience, not your mercy; give up this destruction, this slaughter. We will not give up the struggle!" (Cover and news photos: Kerem Can)

Lavender Processing Plant: Good News for Producers

The lavender flower, which was presented to producers as an alternative product with high added value in 2015 when Soyer became the Mayor of Seferihisar, entered the eighth year of the Lavender Harvest Festival in Turgut Village. Turgut Village is the production center of lavender flower in Seferihisar, which is widely used in alternative medicine and cosmetics sector and contributes to beekeeping with its nectar and fragrant flowers. At the first harvest in the village, Mayor Tunc Soyer gave the producers the good news of the facility to be opened in the coming days: "Thanks to the facility we will open for your use in Ulamis this month, you will make much better use of your lavender with its essence, cologne and soap."



Izmir Products Take Their Place in the World Market



"Izmirli" (mMade in Izmir) branded products, which are 100 percent domestic production created with Soyer's vision of "A Different Agriculture is Possible", were introduced at the Fancy Food Show Fair held in New York, United States of America. The products, which are purchased from farmers and processed by IzTarım INC., a subsidiary of Izmir Metropolitan Municipality, were presented to the taste of world professionals of the gastronomy industry. Izmir products, which attracted great attention at the fair, are getting ready to hit the Canadian and US markets less than a year after their introduction. Stating that a dream has come true, Mayor Soyer said, "Izmir products will take their place in the world market; Izmir producers will be nourished where they were born."

Cigli Waste Water Treatment Plant: Groundbreaking for Phase 4 Project



Explaining that they have allocated more than half of IZSU's investment budget to solve the biggest problem of Izmir city center that has been waiting for half a century and to leave a clean Gulf for children, Mayor Tunc Soyer said, "The essence of our 11 billion 95 million lira Living Bay investment is as follows... We have taken the pollution that has been flowing into the Gulf for 50 years under siege from land, shore and sea. Of course, many studies have been carried out on the Gulf until today. Some of these have been completed and some remain unfinished. I would like to express my gratitude to all our previous mayors for their efforts. In this period, instead of sweeping pollution under the rug, we have determined a comprehensive and innovative road map that eliminates pollution at its source. We have put the pollution in the Gulf under siege with ten gigantic investments on land, on the shore and in the sea like the links of a chain. We are rooting out the pollution in the Gulf of Izmir with our investments."

Within the scope of the "Living Bay" program, which was designed by IZSU General Directorate with a huge budget of 11 billion 95 million liras and prepared with scientific planning, the construction of the 4th Phase of Cigli Advanced Biological Waste Water Treatment Plant has started. The foundation of the Phase 4 construction, which will increase the capacity of Cigli Wastewater Treatment Plant, which carries most of Izmir's wastewater treatment load, by 36 percent, was laid with a ceremony.

Mayor of Izmir Metropolitan Municipality Tunc Soyer, Deputy Mayor of Izmir Metropolitan Municipality Mustafa Ozuslu, Mayor of Cigli Utku Gumrukcu, Mayor of Bayrakli Serdar Sandal, Mayor of Narlidere Ali Engin, council members, headmens, representatives of non-governmental organizations and citizens attended the ceremony.

Speaking at the ceremony, Mayor of Izmir Metropolitan Municipality Tunc Soyer stated that the biggest problem of Izmir for nearly half a century has been the pollution of the Gulf. Stating that today they are experiencing one of the most important moments heralding the end of a 50-year sulk, Mayor Tunc Soyer said, "Our Living Bay mobilization is moving to a brand new stage today. We are together for the groundbreaking ceremony of the fourth phase of the Cigli Waste Water Treatment Plant, one of the most important investments that will carry us to our goal of a swimmable Gulf. The budget we have allocated for the 'Great Gulf mobilization' prepared with meticulous scientific planning is 11 billion 95 million liras. He stated that the amount of dirty water to be treated by the Fourth Phase alone is 216 thousand cubic meters.



*Mehtmet IZOLLUOGLU - Arbiogaz INC. -
Chairman of the Board of Directors*

7 New Swimming Trainings in Izmir: Portable Pool Support

Izmir Metropolitan Municipality Mayor Tunc Soyer opened 7 portable pools this year to provide equal opportunities in disadvantaged neighborhoods. The pools, where children between 6 and 13 years old will receive swimming training, are located in Bayrakli, Konak, Bornova, Buca, Kiraz and Beydag. The goal is to train 11 thousand more children this year and teach 23 thousand children to swim in total. They also plan to increase the number of pools to 10 next year. Families and children in Izmir are very pleased with this project and express their gratitude.



Savings for the Public Budget from IZELMAN

While Izmir Metropolitan Municipality had been outsourcing the routine maintenance and repair of the elevators and escalators of the underpasses and overpasses located on the main arterial roads and railway intersections in the metropolitan districts to private companies with service qualification certificates, IZELMAN INC., which obtained a service qualification certificate, has taken a new practice. The service, which will cost 40 million liras, has resulted in significant savings. IZELMAN INC. committed to perform the service procurement work for 17 million 895 thousand 800 liras. In this way, Izmir Metropolitan Municipality saved approximately 22 million liras.



Izmir Joins Global Sustainable Tourism Council



Izmir Metropolitan Municipality became a member of the Global Sustainable Tourism Council (GSTC). Mayor of Izmir Metropolitan Municipality Tunc Soyer stated that thanks to this membership, the city has taken another important step in the field of sustainable tourism and that works in harmony with nature and the environment will be introduced to the world as tourism elements. Referring to the increasing interest in sustainable tourism in the world, Mayor Soyer stated, "Sustainability principles in tourism have an important role in the preference of destinations. Izmir is acting proactively as a member of the Global Sustainable Tourism Council."

Investments Continue in Izmir

Izmir Metropolitan Municipality continues its investments and projects without slowing down while meeting the daily needs of the city and solving problems without interruption despite the country's aggravating economic conditions due to high inflation, exchange rate difference and economic crisis. In the project expenditures section of the Budget Realization Report, the data for the January-April period of 2023 drew attention. According to the Budget Realization Report of the institution, when the data for the January-April period of 2022 and the same period of 2023 are compared, it was seen that the total investment amount increased from 823 million 371 thousand TL to 2 billion 298 million 667 thousand TL.



Blue Flag flies on 40 of 41 public beaches in Izmir



Izmir Metropolitan Municipality continues to bring new blue flag beaches to the city with environmental investments.

Izsu takes historic steps for a clean Gulf



Izmir Metropolitan Municipality Mayor Tunc Soyer inspected the dredging works carried out by IZSU to prevent the odor problem caused by shallowing in the bay and the improvement activities at the Cigli Treatment Plant.

Cycling is becoming more widespread in Izmir



Izmir Metropolitan Municipality launched a free shared bicycle application for its employees in order to make bicycle transportation a corporate culture and spread it throughout the city.

Double trophy under water



In the U21 and U15 Underwater Rugby Türkiye Championships held at Izmir Metropolitan Municipality's Pool Izmir facilities, the host team won two trophies. Izmir Metropolitan Municipality Sports Club came in second and Sports Valleys and third for U21 girls and U15 girls.

Residents of Buca take good care of Firat Living Park



"Firat Living Park", which was established by Izmir Metropolitan Municipality in Buca for the integration of citizens with nature, has become one of the favorite places of the residents of the district. Welcoming more than 10 thousand visitors a day, citizens also protect the park as if it were their own.

Izmir Bay was the scene of Cabotage Day ceremonies



Mayor of Izmir Metropolitan Municipality Tunc Soyer. Within the scope of July 1 Maritime and Cabotage Festival events, he attended the wreath-laying ceremony in the Gulf organized in memory of the martyrs of the sea.

Izmir Tops the List of University-Friendly Big Cities



The "University-Friendly Metropolitan Municipalities" report prepared by the Public Technology Platform was announced. Izmir Metropolitan Municipality ranked first in the research, which evaluates the services and opportunities offered by metropolitan municipalities in Türkiye to university students and their efforts to improve the quality of life of young people.

241 million liras of contribution to Izmir residents in 4 years with Halk Tasit (Public Transportation)



Izmir Metropolitan Municipality launched the Public Transportation application in all public transportation vehicles, saving 428 TL per month for full boarding passengers.

Migratory birds of Izmir Wildlife Park



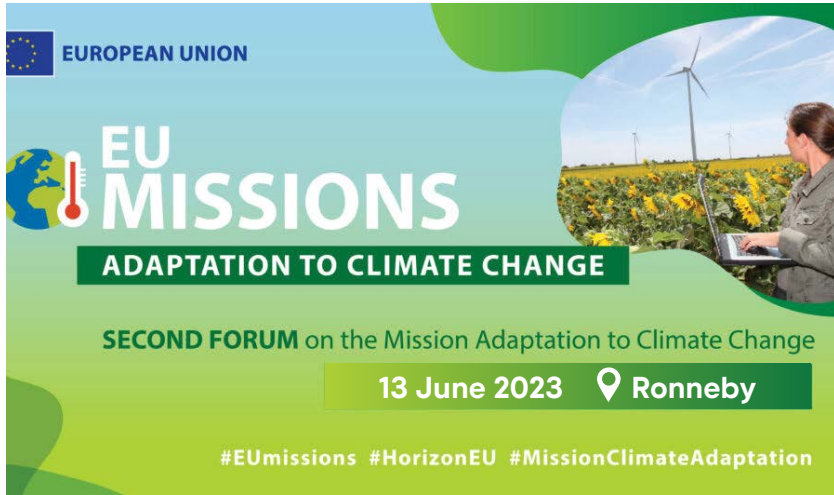
Izmir Metropolitan Municipality Natural Life Park is home to bird species such as the white pelican, swallow and Isaac's bird, which travel between continents and spend some months of the year in Izmir, as well as local bird species.

Zero carbon awareness in Kulturpark



Launched in line with the zero carbon target in 2030, SUMP Izmir took to the streets for the future of the city. While Izmir's sustainable transportation route was raised in citizen forums, awareness was raised about carbon emissions and environmentally friendly transportation vehicles in Kulturpark.





Izmir Took Its Place at the 2nd Conference on Climate Change Adaptation Mission

The 2nd Climate Change Adaptation Mission Forum, the first of which was held on June 7, 2022, was held on June 13, 2023 in Blekinge, Sweden.

IZENERGY INC., which is the contact point of the Climate Change Adaptation Mission on behalf of Izmir Metropolitan Municipality, provided representation with the participation of Mr. Ercan Turkoglu, Chairman of the Board of Directors.

The Forum, where local and regional participation is important, is an important management element of the mission and aims to bring together national, regional and local authorities and mission-friendly institutions and organizations.

With this event, which is planned to be organized every year, opportunities



are provided to address the problems encountered in adaptation to climate change and to put forward road maps for the future.

During the event, a workshop was organized to bring together mission signatories and mission friends. The workshop was attended by around 80 people representing around 50 regional and local authorities and encouraged cooperation and exchange of experiences.

The purpose of the workshop was twofold. First, participants were provided with the opportunity to familiarize themselves with new tools

introduced by mission partners to assist climate adaptation efforts. These tools include the MIP4Adapt technical assistance, the Regional Adaptation Support Tool (RAST) of the European Environment Agency, the tools developed by REGILIENCE and its partners, ERRIN: European Regions Research and Innovation Network's support mechanisms for regional and local authorities and the resources of the P2R project for resilience pathways. An interactive Q&A session further enhanced the engagement and understanding of these tools.

Secondly, the workshop built on the community of practice established in January to continue networking and shared experiences.

Participants worked on the mutual challenges of climate change adaptation, contributing to a dynamic atmosphere of learning and collaboration.

Through a series of breakout sessions, participants engaged in a World Cafe format discussion on key climate issues and needs, existing solutions and potential areas for collaboration. The World Cafe tables were clustered around four main themes: heatwaves and droughts, floods and storms, agriculture and forestry, and an "other" category covering mainly infrastructure.

The results of these discussions were collected in a debriefing session and



the main challenges, needs and overall conclusions were drawn. The insights gained from these discussions, combined with the new tools presented, inspired further dialogue and collaboration within the community and helped participants to develop their ability to effectively confront climate hazards.

The event provided an opportunity to meet the good practices of many local governments and to share Izmir's experiences and perspectives on becoming a climate resilient city.



European Commission, national authorities, NetZeroCities Platform and other stakeholders.

IZENERGY, the contact point of the Climate Neutral and Smart Cities Mission on behalf of Izmir Metropolitan Municipality, was represented at the event with the participation of Ercan Turkoglu, Chairman of the Board of Directors.

The conference aimed to invite participants to connect and engage with mission-critical concepts and ideas.

The event provided an important opportunity for mission-relevant stakeholders to meet face-to-face, engage with high-level representatives at EU, national and local level, and continue to develop cities' climate neutrality journeys.

In Brussels for the Conference of Climate Neutral and Smart Cities Mission

Mission in progress: Climate-Neutral and Smart Cities 2023 Conference, June 26-27 in Brussels, in partnership with the European Commission and Mission Platform NetZeroCities was organized.

The Mission's second year event was widely attended by mission city mayors, political representatives and technical teams of the Cities Mission,



The first day of the two-day event was designed as a day for exchange and dialogue between cities' mission implementers, while the second day included a policy follow-up for mayors and deputy mayors and dedicated sessions for technical teams.

Frans Timmermans, Vice-President of the European Commission, encouraged cities to continue their efforts: "Your work under the Cities Mission is courageous and necessary. It shows Europe what the cities of the future could look like and what climate neutrality really means: fresh air safe streets, green spaces".



The European Commission's Climate Neutral and Smart Cities Mission offers an important opportunity for cities to take a radical and innovative path. The Commission aims to accelerate the climate neutral transformation by identifying 112 pioneering cities that aim to be climate neutral by 2030. Mission cities are expected to build an urban alliance towards climate neutrality and become key experience centers for this transformation. The Commission will continue to support Mission cities financially, technically and politically in this process. Since its selection as a pioneer city, Izmir has been working on its climate neutral journey with great dedication.



Jane MCLAUGHLIN - NZC City Advisor,
Adriana Colquechambi Zea O'PHELAN - Citizenship and Stakeholder Mobilization Specialist,
A. Ercan Turkoglu - Chairman of IZENERGY INC,
Keira WEBSTER - NZC City Advisor, Ed SYNNOTT - NZC City Advisor

During the event, Mission Cities reflected on their experiences so far under the EU Cities Mission.

They discussed how NetZeroCities can continue to support cities on their path to climate neutrality.

Cities identified the challenges they face and agreed on how they want to work together to solve them.

The breakout sessions gave cities the opportunity to have interesting discussions on key topics such as investment plans, stakeholder engagement, pathways and indicators, transition teams, social innovation and portfolio design.



Izmir Together with District Municipalities on Climate Neutrality




A Pioneer in Turkey!

Izmir Metropolitan Municipality is working to become the first city to have SECAP reports with 30 districts.

Sustainable Energy and Climate Action Plan for All District Municipalities!

IZMIR METROPOLITAN MUNICIPALITY IS TAKING A STEP THAT WILL BE THE FIRST IN TURKEY AND WILL SET AN EXAMPLE FOR OTHER CITIES BY LAUNCHING A TRAINING, CONTENT AND METHODOLOGY SUPPORT PROGRAM FOR THE PREPARATION OF SECAP REPORTS FOR ALL DISTRICT MUNICIPALITIES IN IZMIR.

- ✓ Strengthen the Community Climate Alliance.
- ✓ Ensure consistency in key reporting and climate targets across Izmir and its districts.
- ✓ It will create a common SECAP synergy between each district municipality and the Metropolitan Municipality
- ✓ Provide municipalities with easier access to internal and external financing and funding support.

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 [0232 411 77 00](tel:02324117700) |
 info@izenerji.com.tr

municipalities. In this way, the importance of preparing and implementing SECAP (Sustainable Energy and Climate Action Plan) for Izmir to achieve its climate neutrality target was emphasized.



It was shared that the management, organization, communication and coordination of the ongoing project will be carried out by the GCC Izmir (Global Climate Community) platform.

As a result of the coordination, important steps were taken within the scope of the project with our district municipality.

At the end of the project, it is aimed to create a common SECAP synergy between each district municipality and the metropolitan municipality, as well as to enable each municipality to have easy access to internal and external financing and funding support by reporting at the international level.

Integrated SECAP Preparation and Coordination Project in Izmir and its Districts Continues with Great Devotion

IZENERGY, the Integrated SECAP Preparation and Coordination Project

in Izmir and its Districts Continues with Great Devotion IZENERGY, the Integrated SECAP Preparation and Coordination Project at the Scale of Izmir and its Districts, continues to work within the scope of the "Integrated SECAP Preparation and Coordination Project at the Scale of Izmir and its Districts" initiated with the support of relevant experts.

On April 12, 2023, following the Project Opening Meeting held with the participation of our district municipalities, Izmir Metropolitan Municipality and our district

Green Transformation Begins in Izmir

Within the scope of the EU Climate Neutral and Smart Cities Mission carried out under the coordination of Izenergy, studies have started to be implemented to realize the 2030 climate neutral targets. Accordingly, when the greenhouse gas emission values in the Sustainable Energy and Climate Action Plan prepared by Izmir Metropolitan Municipality are analyzed (See: SECAP Figure 21), it is seen that emissions from fuel and electricity consumed in residences rank third. Reducing greenhouse gas emissions from residential buildings is of utmost importance for the realization of climate neutrality targets.



On the other hand, while there are so many greenhouse gas emissions in households, there are still households that cannot access electricity and have difficulty in paying energy consumption costs. According to the World Energy Outlook 2021, 770 million people are still unable to access electricity and suffer from energy poverty. In Turkey, hundreds of thousands of households are unable to pay their natural gas and electricity debts. Energy poverty, defined by the United Nations Development Commission as "the inability to cook with modern cooking fuels and the lack of a minimum level of electric lighting to be able to read or perform other household and productive activities at sunset", is also increasing day by day due to rising energy prices and declining income levels.

Energy efficiency gains importance at this point. Energy efficiency, which is defined as using energy economically without compromising our quality of life and production, has not been fully internalized in our country, and incentives are realized on the basis of public and private sectors, and there is no incentive for households or small businesses.

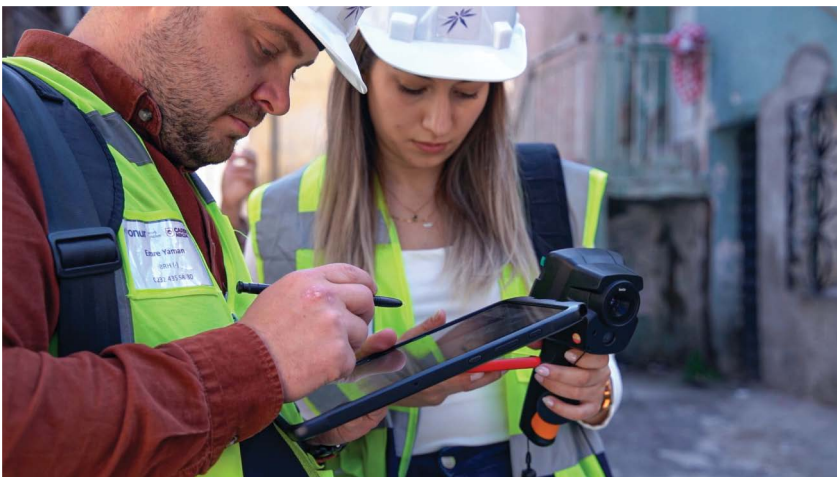
For all these reasons, Izenergy INC. has initiated the Green Transformation Program. The Green Transformation Program, which is defined as a micro-scale energy efficiency project, aims to increase energy efficiency and combat energy poverty through practices to be carried out in households (Package-1), small tradesmen/businesses (Package-2) and residences of low-income families (Package-3). Within the framework of

agreements with the fund, banks, sponsors, donors and white list suppliers, thermal insulation, window/joinery, white goods, motorized equipment, lighting, etc. will be transformed.

The first pilot application in the program, which is planned to be realized in three phases, was initiated in the Kadifekale region, which is evaluated within the scope of the Cittaslow Metropolis Calm Neighborhoods Project, for low-income families experiencing energy poverty. Requests from 52 households in 8 neighborhoods (Ulku, Yeni, Sakarya, Suvari, Ali Reis, Altinordu, Pazaryeri, Tuzcu) have been received, preliminary studies have been completed, and procurement and budget studies are being carried out in cooperation with sponsors and donors.

With the program, which is planned to be expanded to the whole city after the evaluation of the pilot applications, it is expected to increase savings due to a decrease in energy consumption, and it is thought to be an important tool in the fight against climate change. It will raise awareness of citizens on energy efficiency issues and most importantly, it will pave the way for citizens to invest in areas such as children, personal and household needs depending on the reduction in energy costs.

The effects of the global climate crisis, which are increasing day by day, make themselves felt through natural disasters, pandemics and energy crises. In order to leave a livable world for our children, we must make energy efficiency and renewable energy a part of our lives and raise awareness.



IZENERGY INC. Employees



Oktay Rıza GOK

I was born in 1995 in Balıkesir. Before joining IZENERGY, I worked as a taxi driver for a long time. I am currently working as a driver in IMM Administrative Affairs Branch Directorate. I am very happy to be a part of this beautiful family. I would like to express my sincere respect to IMM and Izenergy.

I am a 1986 graduate of Istanbul University Cerrahpasa Faculty of Medicine. I was born in Izmir. I worked in various health institutions affiliated to the Ministry of Health. I retired from Balçova Thermal Facilities Physical Therapy and Rehabilitation Center where I worked in 2018. I have been working as a workplace physician at IZENERGY INC. since 2019.



Dr. Biral Cavdar



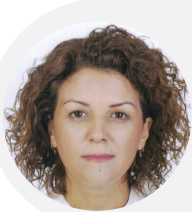
Asli OZADIR

I was born in 1982 in Bayındır Izmir and I am a student of political sciences at the Open Education Faculty. In 2019, I joined the Izenergy family. I have been working as an office staff in KUDEB Branch Directorate. I am honored and happy to serve Izmir Metropolitan Municipality within Izenergy.

I was born in 1983 in Kula, Manisa. I graduated from secondary school. I work as a cleaning staff at the Waste Transfer and Supply Branch Directorate. I am hearing and speech impaired. I would like to thank Izmir Metropolitan Municipality and IZENERGY family. I am glad to be a part of this family.



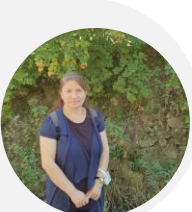
Hasan Huseyin CELIK



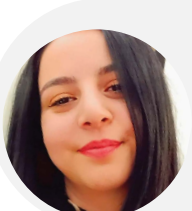
Dr. Ender KARABULLUT

In 2000, I started working at Izmir Red Crescent Blood Center. I worked as a dialysis physician and emergency room physician. I worked as a Dialysis Responsible Physician, Emergency Physician and Workplace Physician at Seferihisar State Hospital. I have been working as a Workplace Physician at Izenergy INC. since 09.2021.

I was born in 1972 in Trabzon Macka. I graduated from Macka High School. I moved to Izmir in 1991. I joined the Izenergy family in 2009. I have been working as an assistant staff in IMM KUDEB Branch Directorate. I would like to thank Izmir Metropolitan Municipality and Izenergy.



Kader GUMUS



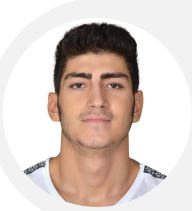
Betül KURT

In 2020, I joined IZENERGY. I am currently working as an executive secretary at IMM 1st Legal Counseling Department. I love my duty and the unit I serve. I am proud to be a part of Izmir Metropolitan Municipality and IZENERGY INC. family.

I was born in 1979 in Erzurum Karacoban. I graduated from Izmir Kemalpaşa High School. I have been working for Izenergy since 2017. I have been working as an office staff in IMM KUDEB Branch Directorate. I am honored and happy to serve our beautiful Izmir.



Suleyman AKPINAR



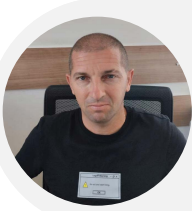
Ferhat BAKAY

I graduated from Nilüfer Special Education Vocational High School and I am hearing impaired. I work as a concierge in IZENERGY and I would like to express my endless thanks to Izmir Metropolitan Municipality and IZENERGY family. I also played for the Hearing Impaired Football National Team in 2022.

I am married and mother of two children. I am a 1998 graduate of EUTF. In different provinces in the Ministry of Health of the Republic of Türkiye; I worked as an emergency service / 112 ambulance physician, Family Physician in 1st Step Health Services. In 2012, I started working in the private sector as a Workplace Physician. I have been working as a workplace physician at IZENERGY INC. since 2020.



Dr. Gulayse GURARSLAN



Fikret OZYURT

I was born in 1982 in Karsiyaka, I graduated from high school, I am married with one child, I work as a cleaning staff at the Waste Transfer and Supply Branch Directorate, I am hearing and speech impaired, I would like to thank Izmir Metropolitan Municipality and IZENERGY family for providing us with this opportunity.

Since 2008, I have been working for IZENERGY INC. I have been working as a distribution staff in the Assembly Branch Directorate under the Izmir Metropolitan Municipality Registry and Decisions Department. I am married with two children. I would like to thank IMM and IZENERGY family.



Sabri YILMAZ

“ We have been determined from the beginning.
We will weave Izmir with iron nets. ”

Tunc SOYER

Mayor of Izmir Metropolitan Municipality

Narlidere Metro construction is coming to an end



İZMİR METROPOLITAN MUNICIPALITY

“ One of the most beautiful privileges of living in Izmir is our "Blue Flag" beaches. ”

Tunc SOYER
Mayor of Izmir Metropolitan Municipality

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