

CLIMATE CHANGE MONITORING REPORT

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LIST OF ABBREVIATIONS

EU	European Union
AL	Albania
API	Application Programming Interface
BEI	Baseline Emission Inventory
BG	Bulgaria
BiH	Bosnia Herzegovina
BİMTAŞ	Boğaziçi Landscaping Construction Consulting Technical Services Industry and Trade, Inc.
UNFCCC	United Nations Framework Convention on Climate Change
B40	Balkan Cities Network
CDP	Carbon Disclosure Project
COP28	28 th Conference of the Parties
CPMA	Central Project Management Agency
ÇEDBİK	Environmentally Friendly Green Building Association
EBRD	European Bank for Reconstruction and Development
EIT	European Institute of Innovation and Technology
ESG	Environmental-Social-Governance
EYAM	Energy Management and Disclosure Directorate (Istanbul Metropolitan Municipality)
GCoM	Global Covenant of Mayors
GEH	Green Energy Hub (GREEN DEAL-TURKLIT)
SPP	Solar Power Plant
GPC	Global Protocol for Community-Scale Greenhouse Gas Emission Inventories
GR	Greece
HR	Croatia
ICLEI	Local Governments for Sustainability / International Council for Local Environmental Initiatives
IPCC	International Panel on Climate Change
IRENA	International Renewable Energy Agency
IMM	Istanbul Metropolitan Municipality
CCAP	Climate Change Action Plan
ICP	Istanbul Climate Platform
IPA	Istanbul Planning Agency
İSKİ	Istanbul Water and Sewerage Administration
İSKOM	Istanbul Water and Control Automation Center
İSPARK	İstanbul Parking Lot Operations Trade, Inc.
KİPTAŞ	İstanbul Housing Zoning Plan Industry and Trade, Inc.
KO	Kosovo
MK	North Macedonia

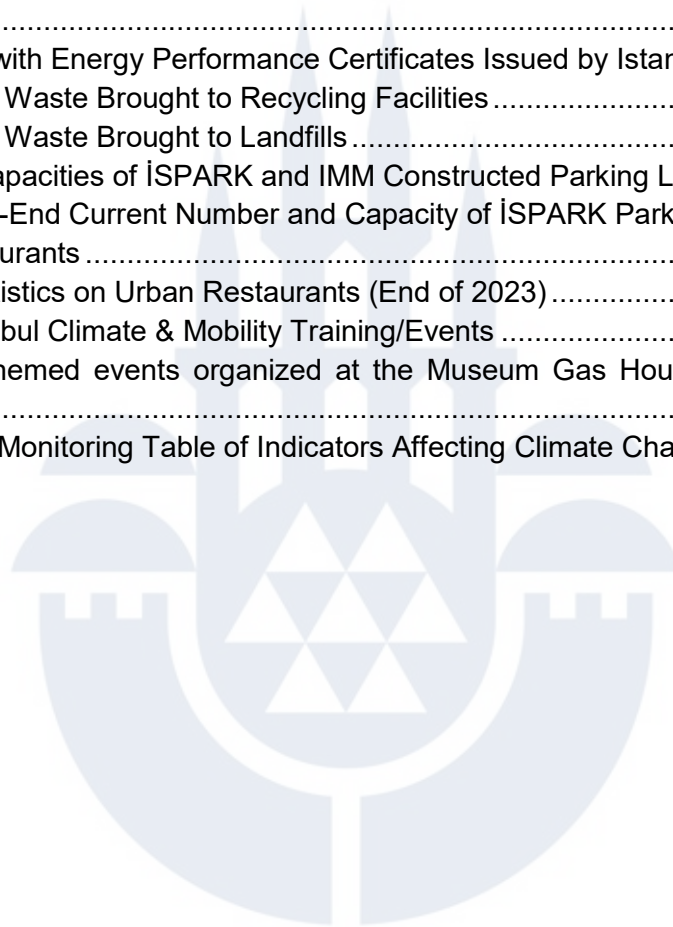
MN	Montenegro
METU-GÜNAM	Middle East Technical University Solar Energy Research and Application Center
OPCC	One Planet City Challenge
PoC	Proof of Concept
PCED	Positive Clean Energy Zones
PV	Photovoltaic
RS	Serbia
RVA	Risk and Vulnerability Assessment
RMS	Regulating and Metering Station (Gas Pressure Regulating and Metering Station)
SaaS	Software as a Service
SECAP	Sustainable Energy and Climate Action Plan
SUMP	Sustainable Urban Mobility Plan
NGOs	Non-Governmental Organizations
SMTC	Sustainable Mobility Training Center
tCO _{2e}	Tons of Carbon Dioxide Equivalent
TOE	Tons of Oil Equivalent
TR	Türkiye
TÜRKAK	Turkish Accreditation Agency
UCLG MEWA	United Cities and Local Governments, Middle East and West Asia Regional Organization
UNEP	United Nations Environment Program / UN Framework Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
VAP	Vision Action Plan
WMO	World Meteorological Organization
WWF	Worldwide Fund for Nature
GCAP	Green Cities Action Plan

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- Parks, Gardens and Green Areas Department, Anatolian Side Parks and Gardens Directorate
- Parks, Gardens and Green Areas Department, European Side Parks and Gardens Directorate
- Parks, Gardens and Green Areas Department, Green Areas and Facilities Construction Directorate
- Earthquake Risk Management and Urban Improvement Department, Disaster Coordination Center Directorate
- Earthquake Risk Management and Urban Improvement Department, Istanbul Urban Development Workshop Directorate
- Support Services Department, Enterprises Directorate
- Transportation Department, Logistics Management and Terminals Directorate
- Transportation Department, Transportation Planning Directorate
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- Agricultural Services Department, Agriculture and Aquaculture Directorate
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FOREWORD BY THE HEAD OF THE DEPARTMENT

Dear Istanbulites,

Home to many civilizations over the years, the ancient city of Istanbul is a living value entrusted to all of us with its unique culture and geography. We at the Istanbul Metropolitan Municipality take conscious steps towards this city, always bearing our responsibilities in mind. We continue our work by taking into account the nature, cultural heritage and dynamics of the city.

Taking measures against the climate crisis, in today's conditions, has gone from being a global problem to a disaster situation that requires urgent measures, and is among our priorities. In addition to making our city resilient to climate conditions, it is invaluable for us to work in coordination with our citizens who are the most important stakeholders of local governments in minimizing existing greenhouse gas emissions.

In this document, we have compiled our work on climate change, and we aim to make it a living document of the Istanbul Climate Change Action Plan that sets strategies, targets and actions in four main sectors including stationary energy, transportation, water/wastewater and waste. For this reason, we attach great importance to monitoring the progress made in our actions. I would like to tell you about the major developments in this year's edition of the Climate Monitoring Report, the first of which was published last year.

We have completed **the Istanbul Sustainable Energy and Climate Action Plan (Istanbul SECAP)**, which we had been working on since 2021. The Action Plan focuses on reducing stationary energy emissions, which have the largest share in the greenhouse gas emission inventory and designs specific actions for our subsidiary companies and affiliates that consume the most energy and was shared with the public during its launch attended by the Mayor Mr. Ekrem İmamoğlu. Going forward, we will be focusing on the monitoring of Istanbul SECAP actions.

We have made great progress and held workshops in **the Istanbul Green City Action Plan** launched in November 2023 with the participation of the Mayor Mr. Ekrem İmamoğlu.

Our August 2023 application to the Mission Innovation's **Urban Transitions Mission**, which supports cities' initiatives to become net zero emitters and helps them explore their potential, was accepted in early 2024, and Istanbul has become part of the Urban Transition Mission.

In our **Pilot City** project (Build4GreenIST) aimed to increase citizens' knowledge and awareness of green and carbon neutral buildings through an urban transformation guide, training and capacity building efforts gained momentum and sensors were installed to monitor the energy consumption of residences in the pilot region.

By the end of 2023, the number of **renewable energy facilities** installed was **87**, equivalent to **15,460.6 kWp**. In addition, construction works are underway for a SPP with a total installed capacity of approximately **4000 kWp** in 2024.

The **water loss and leakage rate** is **18.94%**, down from 22.32% in 2019, thanks to ISKI's intensive efforts.

In 2023, we disposed of approximately **15 thousand tons** of waste daily throughout Istanbul. On an annual basis, approximately **1.8 million** of our waste was recycled in recycling facilities. We continue to rapidly increase our recycling rate of **28%**.

Full Speed Ahead in Serving Istanbul!

Regards,

Prof. Dr. Ayşen ERDİNÇLER
Head of Environmental Protection and Development Department



PLAN, PROJECT and MISSION PROCESSES

At the Climate Change Directorate, we prepare action plans and carry out various projects with universities, academia and NGOs to reduce climate change and its impacts and to make our city resilient to these impacts. The chart below shows a list of these plans and projects.



Climate Neutral and Smart Cities Mission

Under the Horizon Europe Program, we submitted an application on behalf of the Istanbul Metropolitan Municipality on January 31, 2022, to the "Call for Declaration of Intent for Climate Neutral and Smart Cities Mission" made by the European Commission.

Istanbul successfully completed the process in which the adaptation capacities, policies, projects and commitments of the cities in the fight against climate change were evaluated, among 377 candidates and was entitled to be among 100+12 (100 from EU members and 12 from other countries under the Horizon Europe) leading cities and was granted **the Mission City brand**.

The mission aims to support 100 (100+12) European cities to become climate neutral by 2030. The aim is to turn all of these cities into centers of experimentation and innovation.

Under the Mission, which is an important step towards becoming a climate neutral and smart city, the selected cities will lead the way for a rapid transformation for climate at a local scale. Being part of the Mission enables our city to share knowledge and experience as a member of a common network with other leading European cities, as well as providing us with significant prestige and visibility in our applications for European Union projects.



Official Logo Prepared for Istanbul - EU Missions: Climate Neutral & Smart Cities

As part of the mission efforts of the Climate Change Directorate on behalf of the Istanbul Metropolitan Municipality, a **Climate City Contract** is being prepared for our city. This contract will include identifying key stakeholders, actions and financial plans for Istanbul's efforts to become climate neutral by 2030 and will consist of 3 parts including Commitments, Action Plan and Financial Plan. The efforts and methodology are shaped by the technical support and contributions of the city consultants appointed by NetZeroCities for Istanbul.

A mission briefing meeting was held in May 2023, with internal and external stakeholders of the city and NetZeroCities city consultants and experts.

We attended the "**Climate Neutral and Smart City Conference 2023**" held in Brussels on June 26-27. Our Municipality's efforts to combat climate change and examples of good practices were presented at the conference.

NetZeroCities Pilot Cities Call - Build4GreenIST Project

We applied to the "NetZeroCities Pilot Cities Program" Call opened to support the city to be climate neutral by 2030 as part of the Climate Neutral and Smart Cities Mission and to test innovative approaches, with the "Green and Carbon Neutral Building Transition Guide-Istanbul Model (Build4GreenIST)" project and were awarded technical and financial support for 2 years, and Istanbul was the first pilot city selected from Türkiye.

Based on the fact that stationary energy is the source that has the largest share (64%) in Istanbul's greenhouse gas emission inventory, the project aims to create a guide for the buildings to be renovated under the urban transformation to be green and carbon neutral in order to support the building-energy actions to be taken in the city, and to monitor energy consumption through sensors in the residences in the pilot region to be selected to drive change of behavior for efficient use of energy.

The project will be led by the Istanbul Metropolitan Municipality Environmental Protection and Development Department, and the work started with the Opening Meeting held in June 2023,

with the project partners, the Environmentally Friendly Green Building Association (ÇEDBİK), Demir Energy and SMARTE Florawise.



Opening Meeting of Build4GreenIST Project

The **"Green and Carbon Neutral Building Transition Guide-Istanbul Model (Build4GreenIST)"** project was launched at MetroHan on August 24, 2023, with the participation of the Mayor Mr. Ekrem İmamoğlu via video. During the launch attended by the IMM executives, executives of the IMM subsidiaries and affiliates, project partners, representatives from the private sector and various public institutions and organizations, the participants were informed about the application process and objectives of the project.



EU Missions: Climate Neutral & Smart Cities – Istanbul Build4GreenIST Project Logo

Beykoz-Çubuklu was selected as an urban transformation pilot area for the project. In this area, we collected the necessary data for the existing situation analysis (Data Analysis-Building Modeling and Energy Simulation-Results Analysis).

The necessary preliminary procedures have been completed in Kiptaş Bayrampaşa Houses, which was determined as a pilot area for another output of the project, i.e., the energy monitoring study (GreenIST Mobile Application).

Istanbul Climate Talks

Interviews were conducted with participants related to the project objectives for the Istanbul Climate Talks planned as part of the dissemination work package of the project.



Istanbul Climate Talks

Technical Visit to B40 Cities

The first technical visit to the B40 cities planned for the dissemination of the project took place on December 18-20 in Sarajevo, Bosnia and Herzegovina. During the technical visit, we exchanged information with the delegation consisting of the Sustainability Department of Sarajevo Municipality and the expert team of the Cantonal Administration on the approaches and activities of the cities on climate and environmental issues. The project's application stage, processes, potential impacts on the city, expected risks and barriers, and its feasibility in Sarajevo were discussed.



Technical Visit to Sarajevo, Bosnia & Herzegovina

Green Buildings, Cities and Energy Efficiency Training

Within the scope of the "Capacity Building" work package of the project, trainings were provided at the IMM ISMEK Centers in cooperation with the Institute Istanbul.



Green Buildings, Cities and Energy Efficiency Training at Institute Istanbul ISMEK Center

Twinning Learning Programme

The "NetZeroCities Twinning Learning Programme" was created to help cities collaborate and share knowledge and capacity on climate action. Under the program, 40 cities across Europe have been declared the first group of "Twin Cities". Istanbul, one of the pilot cities within the scope of the mission, was paired with the City of Mytilene, Greece on a project basis.

During the 20 months of the Build4GreenIST Project, the city of Mytilene will seek Istanbul's guidance, benefit from the IMM's experience and know-how, and receive support from implementers and expert staff.



Twinning Learning Programme: Announcement of Selected Twin Cities

On November 14, 2023, during the "Twinning Learning Programme" Kick-off Meeting held online, we shared our experiences and information about the project with the city of Mytilene on the way to becoming a pilot city.

Urban Planning and Design Ready for 2030 (UP2030) Project

In relation to the Climate Neutral and Smart City Mission, the project application entitled "Urban Planning and Design Ready for 2030 (UP2030)" was submitted by the Climate Change Directorate on behalf of Istanbul Metropolitan Municipality in collaboration with the Middle East Technical University (METU) and the METU Solar Energy Research and Application Center (GÜNAM) from Türkiye to the HORIZON-MISS-2021-CIT-02 call sponsored by the European Commission to set out urban planning and design principles to establish fair, sustainable, resilient and climate neutral cities by 2030 and the application was accepted in July 2022.

Starting in 2023 and lasting for 3 years, this multi-consortium project involves 46 participants including the IMM. The solar energy (PV) potential of the pilot region to be determined with the project will be calculated and a model will be created with digital twin technology to use the clean energy produced in the region for buildings and lighting without storing it and to transfer the remaining energy to electric vehicles used in the urban transportation.



Official Logo of UP2030

Within the scope of the project, we collected data such as building type, roof characteristics, number of floor levels, natural gas consumption, etc., necessary for modeling in Kadıköy district, which was selected as the pilot region. The modeling works are ongoing.

We participated in the Project Kick Off Meeting in Thessaloniki in February 2023, and the First General Assembly Meeting in Lisbon in November, to evaluate the completed and planned parts of the project.



First General Assembly Meeting in Lisbon

In the "Needs & Analysis Stakeholder Workshop" held in May 2023, attended by internal and external stakeholders, we provided information on the project and exchanged opinions with expert stakeholders from METU, METU GÜNAM and NetZeroCities on possible project risks and assessments.



Needs & Analysis Stakeholder Workshop in Istanbul

Urban Transitions Mission

The Urban Transitions Mission (UTM) is a mission launched at COP26 in November 2021, to support cities on their path to achieving their net zero emission targets and build their capacity through robust information and strong communication channels. With increased capacity and access to information, cities will be able to mobilize their natural strengths and the potential of their communities and develop their own customized solutions for an effective transition to net zero emissions.



Official Logo of Urban Transitions Mission

The mission aims to bridge the gap between research, development and dissemination of systemic transition methods towards cities that have net zero emission, are resilient to adverse impacts of climate change through multi-level, multi-sectoral and results-oriented partnerships.

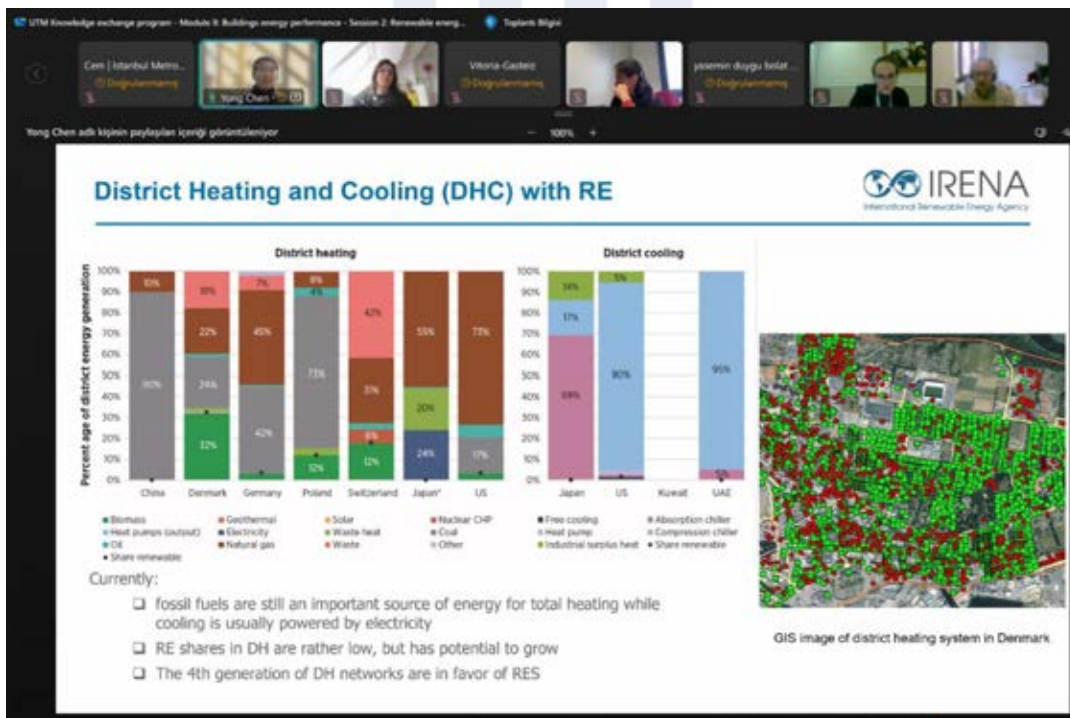
The Urban Transitions Mission emphasizes systemic urban strategies as well as resilience to climate change and the social aspects of climate change impacts. Successful urban transitions will reinforce innovative policies, technologies, financial instruments, business models and collaborative approaches. These aspects need to be integrated to meet the needs of citizens, build on renewable energy sources and circular economy principles, and increase resilience for a people-centered urban transition globally.

The work of the Urban Transitions Mission is led by the Mission Innovation, a global initiative that aims to mobilize actions and investments in research, development and demonstration to make clean energy affordable, attractive and accessible for all.

We applied for the Urban Transitions Mission on behalf of Istanbul in August 2023 and was officially accepted into the Mission in early 2024. As of June 2024, there are 97 cities included in the UTM.

We participated in the work carried out within the scope of the UTM. In addition to the "Carbon Offsetting Workshop", we organized a training series with three modules and three sessions in each module. The topics of these training modules are as follows:

- Generating and distributing renewable energy,
- Solar photovoltaics,
- Carbon capture technologies,
- Building energy performance,
- Renewable energy for heating in buildings,
- Electric vehicles and charging infrastructures,
- Other low carbon transportation options.



The Training on District Heating/Cooling With Renewable Energy



WASD AT A GLANCE

The Miami-Dade Water & Sewer Department (WASD) is the largest water utility in the Southeastern United States, providing high-quality, affordable water & wastewater services to the people of Miami-Dade County.

The Training on Water and Wastewater Treatment Investments in Miami

RISE engaged in



International Energy Agency
Photovoltaic Power Systems Programme

T01 - Expertise-Outreach	
T12 - Sustainability	Michiel van Noord (planned)
T13 - Performance & Reliability	Alexander Granlund, Anne Andersson
T14 - Grid Integration	
T15 - BIPV	Michiel van Noord, Malin Unger (concluding)
T16 - Solar Resource	
T17 - PV & Transport	
T18 - Off-Grid & Edge-Grid	

Overview Task 15 Phase 2 - Subtasks

- Subtask A: Technical Innovation System (TIS) Analysis for BIPV (van Noord, Sweden)**
 - Identifying measures to increase implementation of BIPV, clear action and business plan, etc.
- Subtask B: Cross-sectional analysis: learning from existing BIPV installations (Eder, Austria)**
 - Analysis and comparison of the multi-functionality of BIPV (energy relevant, economic, environmental, visual impact)
- Subtask C: BIPV Guidelines (Kapsis & Martin, Canada & Spain)**
 - Guidebook and technical presentation that provide a complete pathway from BIPV design to installation, maintenance and safety
- Subtask D: Digitalization for BIPV (Yang, Australia)**
 - Using the opportunities of digitalization to make BIPV more easily accessible, more reliable and cheaper
- Subtask E: Pre-normative international research on BIPV characterization methods (Wilson, Germany)**
 - Optimized characterization methods, facilitate local/national building component approval of BIPV, contribute to international alignment of normative requirements on BIPV products and systems

RISE

The Training on Photovoltaic Systems Organized in Collaboration with IRENA



A Training Session in Turku, Finland, About A Student Village That Produces More Renewable Energy Than It Consumes

Climate Change Adaptation Mission

Istanbul has become one of the 301 signatories of the European Union's Adaptation to Climate Change Mission established to support cities to become resilient to climate change by 2030.

In addition to Istanbul, the mission also includes Izmir, Bursa, Eskişehir, Bodrum and İzmit Municipalities from Türkiye.



Logo of EU Missions: Adaptation to Climate Change

The purpose of the Adaptation to Climate Change Mission is to take action to prepare for and adapt to both current and projected impacts of climate change in cities/regions. To this end,

the mission will enable municipalities working for the same endeavor to meet for mutual benefit, test innovative solutions, and access future joint work and financial opportunities.

The active work of the Mission started with a Kickoff Meeting in Brussels on January 26, 2023. We participated in the "Forum Mission on Adaptation to Climate Change" meeting held in Ronneby, Sweden on June 11-14, 2023.

With the "MIP4Adapt Technical Assistance Program" established under the Adaptation to Climate Change Mission, it is planned to provide technical assistance to the municipalities included in the Mission under three different thematic topics. Since September 2023, the Istanbul Metropolitan Municipality Climate Change Branch Directorate has been receiving technical support on the first thematic topic "Support to Climate Adaptation Pathways".

Thereunder, the Technical Assistance Program experts examined Istanbul's Climate Change Action Plan and Sustainable Energy and Climate Action Plan and submitted their analyses and recommendations to us. The Adaptation to Climate Change Mission work is ongoing.



Forum Mission on Adaptation to Climate Change in Ronneby

Istanbul Green City Action Plan (Istanbul GCAP)

The Istanbul Metropolitan Municipality joined the Green Cities Framework Program of the European Bank for Reconstruction and Development (EBRD) in May 2021. The two-year **Istanbul Green City Action Plan (GCAP)**, carried out with the technical support of the EBRD, was launched on May 17, 2023, with a kick-off meeting attended by the representatives of the project preparation team.

On November 1, 2023, the project was launched at an event at Haliç Congress Center with the participation of the Mayor Mr. Ekrem İmamoğlu.



Participation of Mayor Mr. Ekrem İmamoğlu to GCAP Launch Event

Within the scope of the project, **"Set the Baseline: Data and Stakeholder Mapping Workshop with Climate Officers"** was organized on June 16 to share the road map of the action plan with the IMM representatives from key sectors on databases.



Set the Baseline Workshop

The EBRD-funded Istanbul GCAP process consists of the following 6 main phases:

1. Inception phase including the official kick-off meeting and launch event,
2. Collection and evaluation of existing situation data and relevant information,
3. Prioritization of environmental challenges,
4. Defining the city vision and strategic goals,
5. Development of GCAP actions,
6. Preparation and adoption of the Final GCAP document, including the investment plan of GCAP actions.

The four Istanbul GCAP internal reports, namely the Inception Report, Stakeholder Engagement Report, Smart Maturity Report, and Risk and Vulnerability Assessment Report, were finalized after receiving the opinions of the IMM departments.

On August 8, 2023, a **Discover and Determine Workshop** was organized with the participation of Public Institutions, Academia, Private Sector, NGOs and Professional Chambers to identify the environmental challenges of 20 sectors in Istanbul.



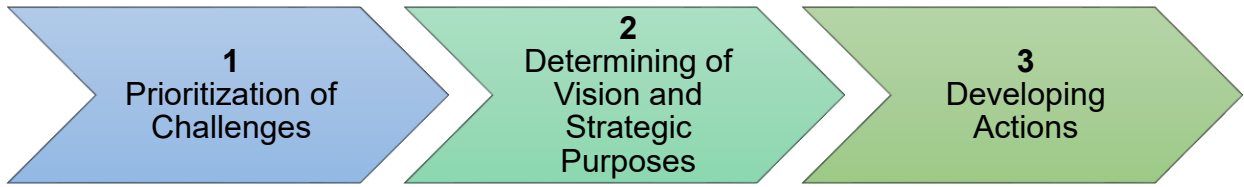
Discover and Determine Workshop

An online **Prioritization of Environmental Challenges Workshop** was held on September 14, 2023, to prioritize the identified environmental challenges with all internal and external stakeholders of the IMM.

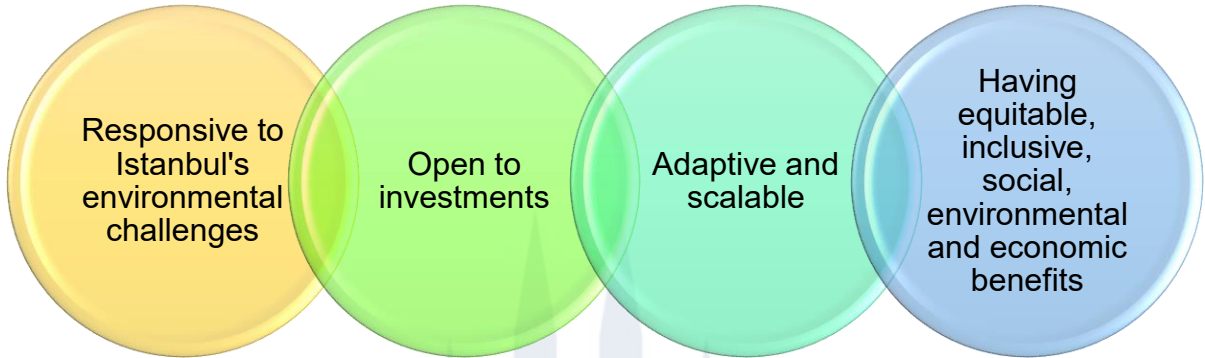


Prioritization of Environmental Challenges Workshop

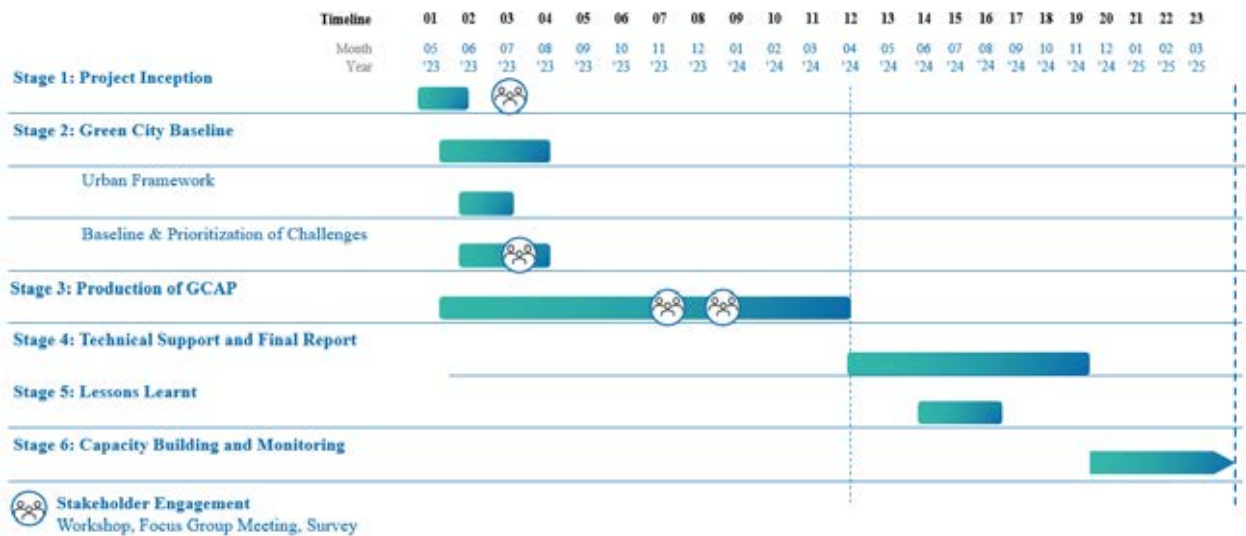
Following the prioritization of environmental challenges, we worked with the IMM's internal departments, subsidiaries and affiliates in the development of Istanbul GCAP actions. In order to elaborate the actions and evaluate the work carried out within the scope of their duties and authorities in the context of the action plan, we organized various sectoral meetings attended by relevant experts and focus group meetings with approximately 135 people from 44 different units.



Process of Action Determining



Criteria of Action Determining



Istanbul GCAP Work Calendar

Istanbul GCAP works are ongoing and the report is planned to be submitted to the Istanbul Metropolitan Municipality Assembly by the end of 2024.

Istanbul Sustainable Energy and Climate Action Plan (Istanbul SECAP)

Being a member of Global Covenant of Mayors for Climate and Energy, the Istanbul Metropolitan Municipality was provided technical support for the preparation of the "Istanbul Sustainable Energy and Climate Action Plan (Istanbul SECAP)" within the scope of the "Energy Transition for EU: The Covenant of Mayors in the Western Balkans and Türkiye" project in order to fulfill its energy and climate targets and to comply with the Sustainable Development Goals, including reducing greenhouse gas emissions by using renewable energy sources .



Istanbul Sustainable Energy and Climate Action Plan

The duration of the project is 48 months (March 1, 2021 - February 28, 2025) and consists of "SECAP Preparation" and "SECAP Monitoring" phases.

We prepared the "Istanbul Sustainable Energy and Climate Action Plan (Istanbul SECAP)" under a project co-financed by the European Union and the German Federal Ministry of

Economic Cooperation and Development, under the coordination of the Climate Change Directorate in cooperation with the Energy Management and Lighting Directorate and supported by our relevant units.

The Istanbul SECAP was approved by the Metropolitan Municipality Assembly with its Resolution No. 1362 dated November 27, 2023, and announced to the public with the launch held on November 27, with the participation of the Mayor Mr. Ekrem İmamoğlu.



Istanbul Sustainable Energy and Climate Action Plan Launch

“Digital Innovation Solutions in the Areas of Climate Change, EU Green Deal, Energy Transition Based on Türkiye and Lithuania Partnership and Development of GEH Platform (GEIH)” Project

The project is aimed to strengthen the capacities of Turkish local authorities in the areas of climate change, EU Green Deal, energy transition by providing digital innovation solutions and to enhance cooperation between municipal-level authorities in Türkiye and Lithuania. The project made a significant contribution to combating climate change and promoting mitigation practices and enhanced cooperation between the municipal authorities in Türkiye and Lithuania.

We applied to the project which was supported by the Embassy of Lithuania, in March and a project agreement was signed on May 4, 2023. The 6-month project was completed in November.

During the technical visit to Vilnius, the capital of Lithuania, between September 19 and 22, we made a presentation at the Lithuanian Parliament on Istanbul's Sustainable Energy and Climate Plan and energy transformation efforts, and many private and public sector representatives from Lithuania came together to explain the work on the "GEH Platform" developed within the scope of the project and to share good practices.



GEH Platform: Lithuania Technical Visit

During the technical visit between November 26 and 28, also attended by the Ambassador of the Republic of Lithuania to Türkiye, project experts presented the outputs of the project and the established GEH Platform in meetings with many internal stakeholders of the IMM.



GEH Platform: Istanbul Technical Visit

AWARENESS AND TRAINING ACTIVITIES

Combating climate change is a process that will be successful not only through urban and industrial transformation, but also by raising social awareness. Therefore, the IMM Climate Change Directorate attaches importance to awareness-raising and training activities that involve all walks of life in the process.

Institutional Capacity Building – IMM Climate Responsibles Training

An "IMM Climate Responsibles Training" was organized between May 23 and 24, 2023. Approximately **350 Climate Responsibles** from all IMM departments, subsidiaries and affiliates participated in the program. The aim of the training was to ensure coordination between the IMM's departments in the fight against climate change and to monitor sectoral progress and carry out the process more effectively. The two-day training was provided by academics and experts who are successful in their fields. All climate responsibles who participated in the training program received a certificate of attendance.



IMM Climate Responsibles Training - Fatih Ali Emiri Cultural Center

Opening the program, Head of the IMM Environmental Protection and Development Department, explained the IMM's climate strategy and monitoring methodology with examples in the light of the works carried out in the municipality.



Prof. Dr. Ayşen Erdinçler, Climate Responsibles Training

Afterwards, **Prof. Dr. Murat Türkeş**, Board Member of Boğaziçi University Climate Change and Policy Implementation and Research Center (iklimBU), discussed the physical basis of climate change and explained the principles of drought literacy and drought management in local governments.



Prof. Dr. Murat Türkeş, Climate Responsibles Training

Prof. Dr. Ömer Lütfi Şen from the Department of Climate and Marine Sciences at ITU Eurasia Earth Sciences Institute explained the global climate scenarios in detail to the participants.



Prof. Dr. Ömer Lütfi Şen, Climate Responsibles Training

In the program, which included interactive activities in addition to informative presentations, **Prof. Dr. Doğanay Tolunay** from Istanbul University Cerrahpaşa Faculty of Forestry, Department of Forest Engineering, Soil Science and Ecology, addressed both the impacts of climate change and the steps required to be taken in the coming days to combat and adapt to climate change.



Prof. Dr. Doğanay Tolunay, Climate Responsibles Training

Prof. Dr. Çiğdem Coşkun Hepcan from Ege University Department of Landscape Architecture discussed nature-based solutions for adaptation to climate change and greenhouse gas mitigation.



Prof. Dr. Çiğdem Coşkun Hepcan, Climate Responsibles Training

Dr. Nuran Talu, President of the Global Balance Association, analyzed the policies and planning processes of metropolitan municipalities to combat climate change.



Dr. Nuran Talu, Climate Responsibles Training



IMM Climate Responsibles Training

Power Up for Climate Event

The Istanbul Metropolitan Municipality Environmental Protection and Development Department, Climate Change Directorate, together with the 350 for Climate Association, Istanbul Şehir Hatları and Istanbul Planning Agency, organized a climate campaign on **November 4, Global Climate Action Day**.

The campaign was organized aboard the historic **Paşabahçe Ferry** with the motto "Power Up for Climate".



Historic Paşabahçe Ferry where "Power Up for Climate" event held on

The Global Climate Action Day event, attended by approximately 500 Istanbulites, drew attention to Istanbul's goal of becoming carbon neutral and the steps taken towards this goal, and the need for civil society and local governments to act in cooperation.



Our citizens participate in “Power Up for Climate” event

Prof. Dr. Ayşen Erdinçler, Head of the IMM Environmental Protection and Development Department, Efe Baysal, Campaigns Officer of the 350 for Climate Association, Oktay Kargül, Secretary General of the Istanbul Planning Agency and Sinem Dedetaş, former General Manager of the Şehir Hatları delivered speeches at the event.



Head of IMM Environmental Protection and Development Department, Prof. Dr. Ayşen Erdinçler, “Power Up for Climate” Event



Mayor of Üsküdar Municipality (Former General Manager of Şehir Hatları A.Ş.),
Sinem Dedetaş, “Power Up for Climate” Event



General Secretary of Istanbul Planning Agency,
Oktay Kargül, “Power Up for Climate” Event



Campaign Director of 350.org,
Efe Baysal, “Power Up for Climate” Event

Throughout the Climate Campaign, citizens were informed about the IMM's climate activities and actions across the city, and attention was drawn to Istanbul's goal of becoming carbon neutral by 2050 and the steps taken towards this goal. The need for civil society and local governments to act in cooperation for a climate-resilient Istanbul was emphasized.



Power Up for Climate Event held on Historic Paşabahçe Ferry
IMM's Climate Works and Targets



Power Up for Climate Event held on Historic Paşabahçe Ferry

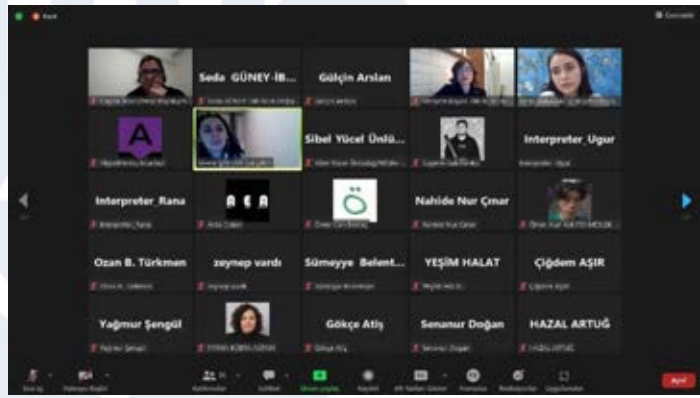
Sustainable and Climate Resilient Istanbul Training

"Sustainable and Climate Resilient Istanbul Training" were organized for young people between the ages of 17 and 29 selected from among those who met the application criteria within the scope of the "Istanbul Prepares for Climate Change Training Program" project, which was also selected from among the project proposals received from citizens via the 2023 Participatory Budget application and assigned to the Climate Change Directorate.



Sustainable and Climate Resilient Istanbul Training

A total of 7 consecutive online trainings, each lasting two hours, were delivered by academics/experts working in the field of climate change and sustainability. In addition, a play workshop on "The Future of the World for Sustainable Development Goals" and events on "Opportunities for Sustainable Living in Istanbul and the IMM" with Municipality officials were organized at IPA Florya Campus. Young people with different levels of education from different segments of society participated in the training.



Sustainable and Climate Resilient Istanbul Training

Meetings, Field Visits and Events

Throughout the year, in addition to attending various meetings, we organized field visits and attended various events.

Sarajevo Energy and Climate Week

At the Sarajevo Energy and Climate Week (SECW) held between September 26 and 29, 2023, Istanbul's efforts and experiences in the process of combating the climate crisis were shared.

At the event organized in cooperation with the Chamber of Commerce of the Federation of Bosnia and Herzegovina, the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina and its stakeholders, in the session "Multi-Level Governance in Planning and Implementation of Energy Transition, Climate Protection and Adaptation to Climate Change", the Head of the Environmental Protection and Development Department shared Istanbul's climate actions and the development of the multi-level governance platform in Türkiye.

The SECW brought together around 1000 participants, including representatives of EU institutions, ministers of energy, climate and environment, government representatives, academics and experts, investors, financiers, NGOs from around the world.



Sarajevo Energy and Climate Week

ÇEDBİK International Green Buildings and Cities Summit

On November 8, 2023, the Istanbul Metropolitan Municipality participated in the International Green Buildings and Cities Summit' 23 hosted by ÇEDBİK with the support of the Turkish Ministry of Environment, Urbanization and Climate Change. The Summit, which hosted hundreds of participants and 41 expert speakers, opened with the "Disaster - Resilient Cities" panel. Then, topics reflecting the global agenda in the sector such as "Decarbonization but How?", "The Future of Our Buildings", "Again Life", "Where is the Source of Transformation?" and "The Future of Istanbul" were discussed by academics and leading representatives of the public and private sectors.

Experts who took the floor in the panels stated that resilient cities would only be possible with sustainable environmental policies. Emphasizing the importance of social awareness, the experts frequently pointed to the need for proper planning and analysis, the use of sustainable materials and supervision, as well as the need for cooperation between the public, non-governmental organizations and academic institutions.



ÇEDBİK International Green Buildings and Cities Summit

Head of the IMM Environmental Protection and Development Department, participated in the "Future of Istanbul" panel and evaluated the IMM's goals and agenda. The IMM also opened a stand in the networking area of the event to promote the "Green and Carbon Neutral Building Transformation Guide-Istanbul Model (Build4GreenIST)" project.

United Nations Climate Change Conference (COP28)

Mayor of IMM and the accompanying delegation attended the World Climate Action Summit held in Dubai between 30 November - 12 December 2023 as part of the 28th Conference of the Parties (COP28) of the United Nations Framework Convention on Climate Change.



28th United Nations Climate Change Conference

Head of the Environmental Protection and Development Department made a presentation on Istanbul's goal of becoming a carbon neutral and resilient city, the Waste Management Plan and IMM's Integrated Waste Facilities in the panel titled "Waste Management in the Global Inventory: Harnessing Mitigation Potential from National Strategies to Local Solutions" at the "Waste&Resources" pavilion organized by the International Solid Waste Association (ISWA).

Staff Exchange Program Technical Visit to Paris Municipality

Within the scope of the Staff Exchange Program held in Paris, France, on December 20, 2023, a technical team from the Istanbul Metropolitan Municipality's both Climate Change and Budget departments met with a delegation from the Energy Ecological Transition and Climate Department, Finance and Procurement Department and International Relations Department of the Municipality of Paris, in order to strengthen our municipality's existing collaborations, add value to its future vision and see good practices in combating climate change.



Technical Visit to Paris Municipality within the scope of Personnel Exchange Program

In the meetings attended within the scope of the program were informational presentations on the Climate Change Action Plan for 2030 and the Climate Change Action Plan including the 2050 target prepared by the Municipality of Paris, efforts to combat climate change and energy transformation, climate budget and green finance/procurement efforts, "Green and Sustainable Green Bond", and we exchanged information and experience.

B40 Balkan Cities Network

The B40 Balkan Cities Network is a platform established by 23 Mayors from 11 countries under the leadership of Istanbul Metropolitan Municipality to initiate a new cooperation process between Balkan cities. The fact that Balkan cities, despite sharing similar geography and cultural values, do not have a prominent cooperation network in economic, technological and cultural terms was the motivation for the establishment of the B40. Through the B40, it is planned to produce innovative solutions by transferring technology and experience on common problems and common goals such as climate crisis, migration, urban poverty, income inequality, local democracy and digital transformation in the member cities of the network.



Official Logo of B40 Balkan Cities Network

The B40 Balkan Cities Network was established in November 2021, with 23 city municipalities, and the number of member cities reached **57** by June 2024.

Table 1. B40 Balkan Cities Network Current (June 2024) Member Cities

Archanes, GR	Alexandroupoli, GR	Athens, GR	Belgrade, RS	Belitsa, BG
Biyelina, BiH	Zenica, BiH	Burgas, BG	Chania, GR	Constanța, RO
Çanakkale, TR	Dimitrovgrad, BG	Bashkia Durrës, AL	Edirne, TR	Galați, RO
Fierbinți-Târg, RO	İstanbul, TR	İzmir, TR	Karditsa, GR	Kardzhali, BG
Karlovo, BG	Karynova, BG	Kırklareli, TR	Kilkis, GR	Kisela Voda, MK
Kotor, MN	Laktaši, BiH	Lefkada, GR	Loshna, AL	Mytilene, GR
Niksic, MN	Niche, RS	Orestiada, GR	Patras, GR	Pella, GR
Plovdiv, BG	Podgoritsa, MN	Pirlepe, MK	Pristina, KO	Prizren, KO
Pula, HR	Rakovski, BG	Saray, MK	Sarajevo, BiH	Skopje, MK
Sliven, BG	Sofia, BG	Split, HR	Old Zagora, BG	Svilengrad, BG
Tekirdağ, TR	Thessaloniki, GR	Tirana, AL	Troyan, BG	Tuzi, MN
Tarnovo, BG	Zagreb, HR			

Member cities by country:

- ❖ Bulgaria (BG) 14,
- ❖ Greece (GR) 12,
- ❖ Türkiye (TR) 6,
- ❖ North Macedonia (MK) 4,
- ❖ Montenegro (MN) 4,
- ❖ Bosnia and Herzegovina (BiH) 4,

- ❖ Albania (AL) 3,
- ❖ Croatia (HR) 3,
- ❖ Romania (RO) 3,
- ❖ Serbia (RS) 2,
- ❖ Kosovo (KO) 2

B40 Balkan Cities Network Local Climate Action Working Group Activities

April 2023: The Head of the Istanbul Metropolitan Municipality Environmental Protection and Development Department handed the Office of the Chairman of the Local Climate Action Working Group of the B40 Balkan Cities Network over to Athens and the activities and joint activities carried out in the previous year were presented to the participants.

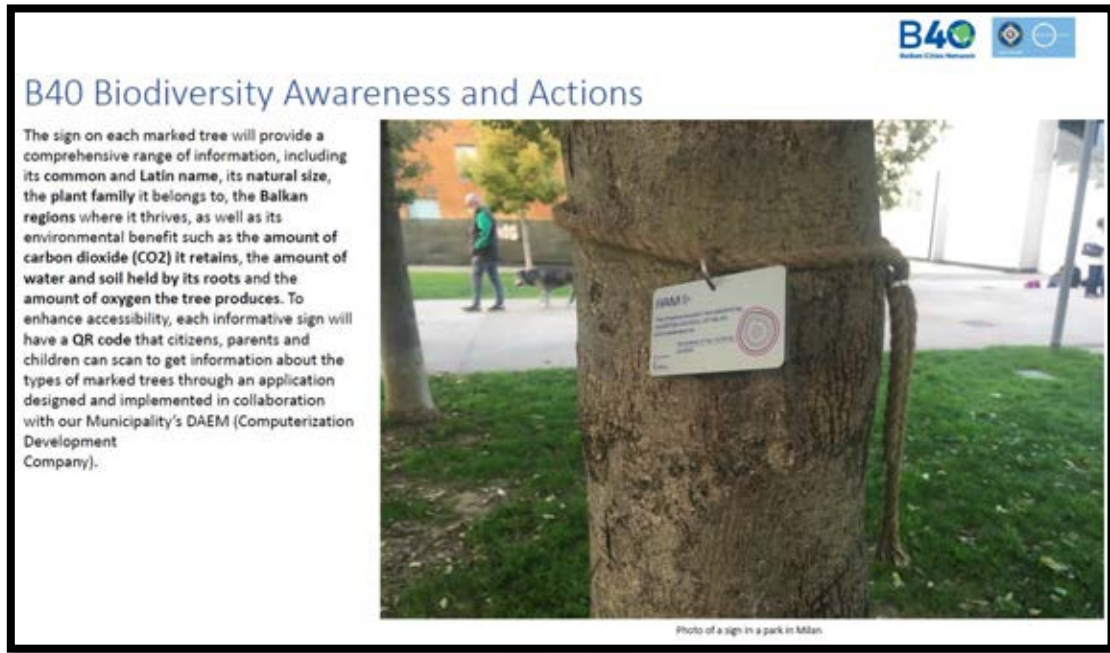
At the first meeting of the Local Climate Action Working Group hosted by the Municipality of Athens, the following topics were discussed.

- Athens' Resilience Strategy and Climate Action Plan (2017)
- Revision of the Climate Action Plan in 2017 (2022)
- Overall Climate Targets (61% GHG reduction by 2030, 100% by 2050)
- Increase Green Spaces by 30% by 2030
- Increase Accessibility (in line with the 15-minute city concept) by 70% by 2030
- Surface temperature and heat island maps prepared for Athens
- Athens and EU Missions



The B40 Local Climate Action Working Group Meeting Held for the First Time Under the Leadership of Athens

July 2023: In the second meeting of the Local Climate Action Working Group, the proposal of the city of Athens of "Labeling Trees with QR Codes" was accepted as a joint activity as the B40 member cities, and it was aimed to access information such as the species, age and carbon sequestration capacity of trees in the city with QR codes.



The B40 Local Climate Action Working Group Meeting Held for the Second Time Under the Leadership of Athens

August 2023: Within the scope of the B40 cities Joint activity, the Parks, Gardens and Green Areas Department prepared and submitted a report including the list of tree species for Istanbul and general characteristics of these tree species to the Chairman of the Local Climate Action Working Group.

Table 2. List of Common Tree Species in Istanbul Sent to the Athens-led B40 Local Climate Action Working Group for Joint Activity Proposal

Latin Name of the Tree	Known Name of the Tree in Turkish
Platanus x acerifolia	London Sycamore
Platanus orientalis	Eastern Sycamore
Pinus pinea	Nut Pine
Quercus robur	White Oak
Fraxinus excelsior	Ash Tree
Cercis siliquastrum	Judas Tree
Pinus brutia	Calabrian Pine
Aesculus hippocastanum	Horse Chestnut Tree
Tilia tomentosa	Silver Linden Tree
Celtis australis	Northern Hackberry Tree

ISTANBUL'S GREENHOUSE GAS EMISSION INVENTORY

2022 Istanbul City-Wide Greenhouse Gas Emission Inventory Results Compared to Previous Years

The total amount of greenhouse gas emissions calculated for 2022 is **51,202,666 tCO_{2e}**.

Table 3. Details of City-Wide Greenhouse Gas Emission Inventory for 2022

Sector	Greenhouse Gas Emission Amount (tCO _{2e})
Stationary Energy	32,793,362
Transportation	14,928,640
Waste	3,480,663
Total Emissions	51,202,666 tCO _{2e}
Emissions Per Capita	3.2 tCO _{2e} /person

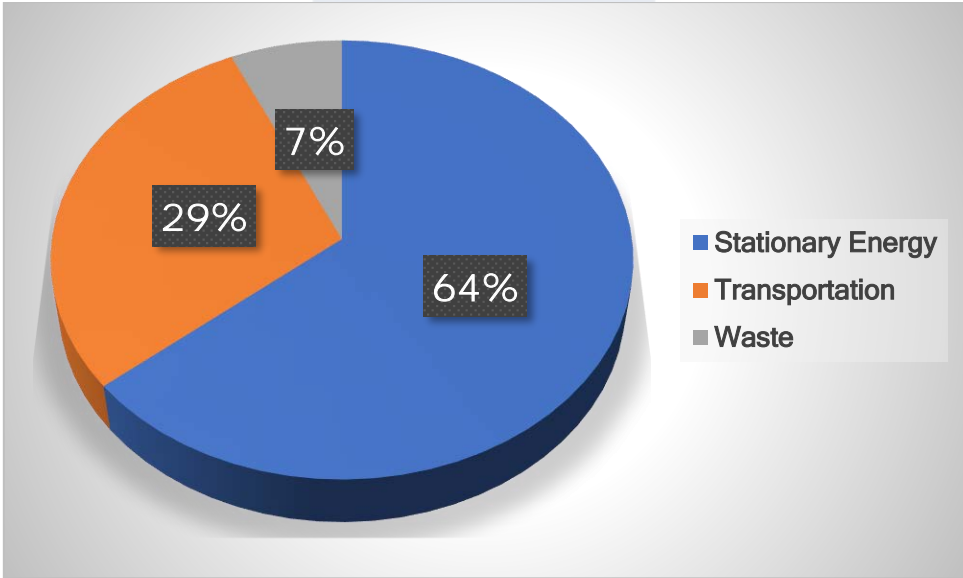


Figure 1. Sectoral Distribution of Istanbul City-Wide Greenhouse Gas Emission Amounts in 2022

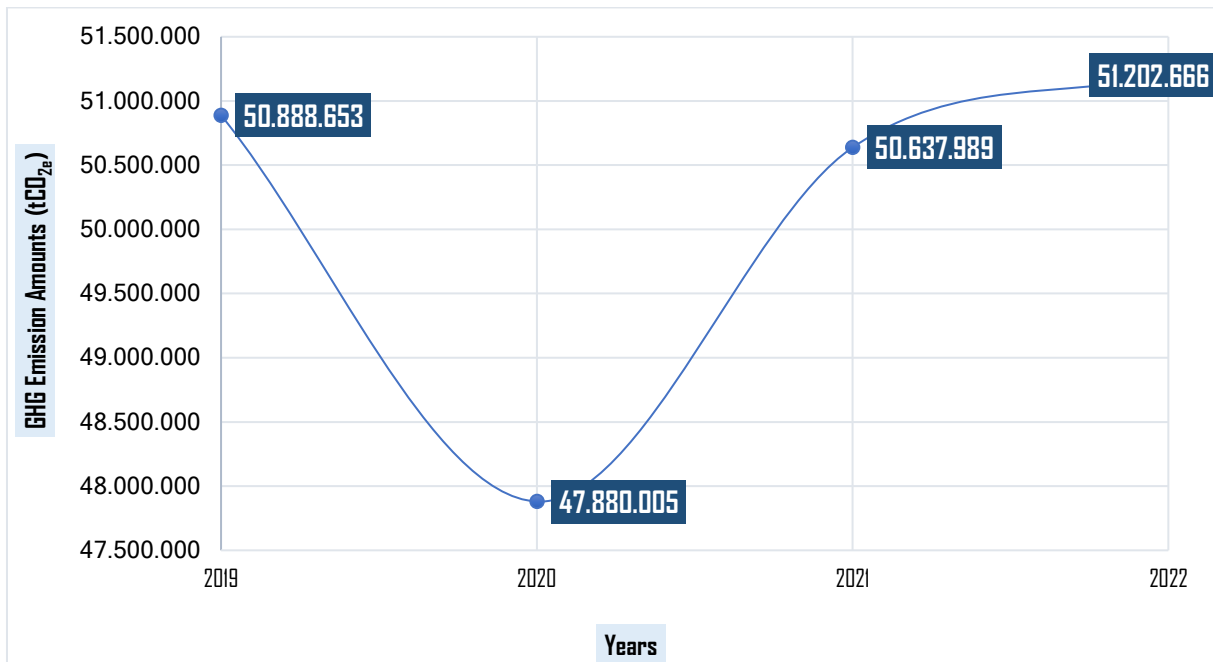


Figure 2. Istanbul City-Wide Greenhouse Gas Emission Inventory: Comparison of GHG Emission Amounts between the years of 2019, 2020, 2021 and 2022

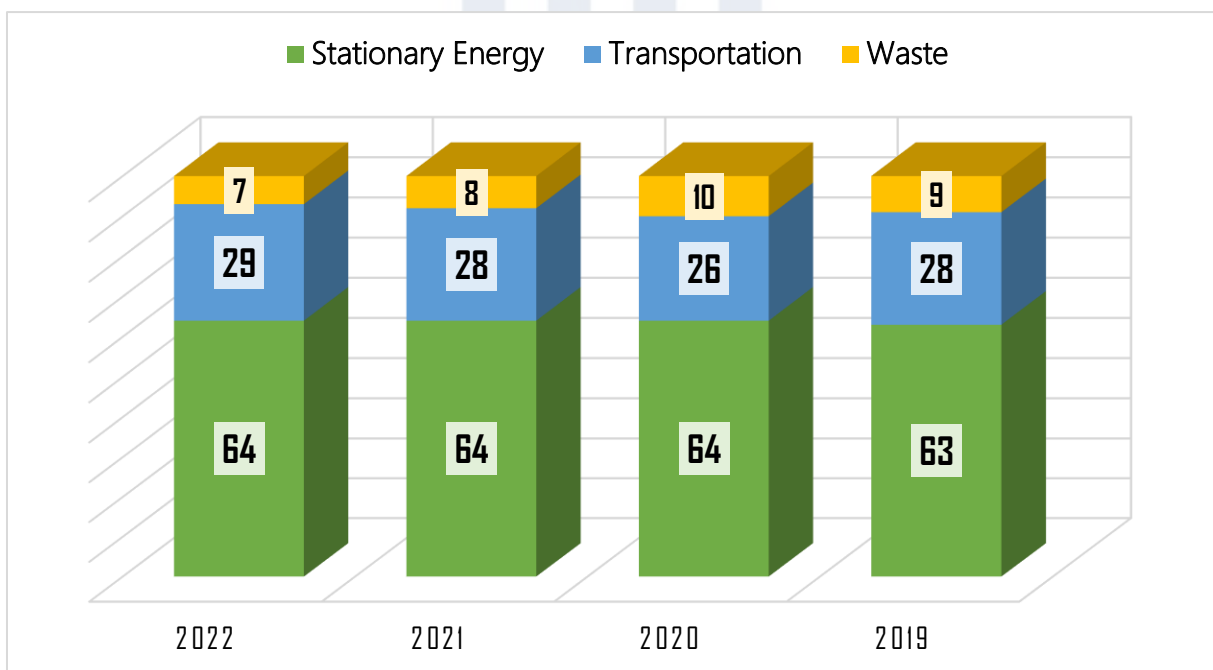


Figure 3. Istanbul City-Wide Greenhouse Gas Emission Inventory: Comparison of Percentage Sectoral Shares between the years of 2019, 2020, 2021 and 2022

As seen from the charts, while the shares of transportation and stationary energy sectors in the total GHG emissions are almost constant, the activities carried out by the Istanbul Metropolitan Municipality in the "waste sector", where the IMM has the broadest authority, are gradually reducing their share in the inventory.

Reporting Process of City-Wide Greenhouse Gas Emission Inventory to CDP

Greenhouse gas emission inventory calculations are regularly done every year and reported to the CDP Cities (Carbon Disclosure Project) network, which is one of GCoM's official reporting platforms.

Istanbul was awarded an **"A"** score as a result of the evaluations conducted by the CDP Cities Network on the "City-Wide Greenhouse Gas Emission Inventory for 2022 and the activities carried out by the IMM in 2022 that contributed to combating climate change", as entered into the system in 2023.



The Picture Showing That Istanbul Has Qualified for the 2023 CDP A Cities List

List A cities generate climate momentum by taking 4 times more climate mitigation and adaptation measures than non-List A cities. In 2023, only **13%** of the cities whose climate actions were scored by CDP achieved an A score.

For a city to achieve an A score, it must have a city-wide greenhouse gas emission inventory, publish a climate change action plan, complete a climate risk and vulnerability assessment, have adaptation to climate change targets and publish them to the public through the CDP Platform. Istanbul was included in the **"CDP Cities A List"** as **one of the 119 cities** with the highest score.

National Climate Pioneers Champion: Istanbul

The WWF's One Planet City Challenge (OPCC) is a global initiative that invites local governments to set themselves on the path to a climate-safe future. For more than 12 years, nearly 900 municipalities from 6 continents have participated in the competition.

More than 350 local governments from 50 countries, including 13 from Türkiye, competed to become global climate pioneers in the 2023-2024 round of the WWF's One Planet City Challenge (OPCC), organized every two years. After the evaluation by the jury, the three cities from Türkiye that qualified for the finals as **"Climate Pioneers"** were Antalya, Istanbul and

Kadıköy. Among the finalists, the Istanbul Metropolitan Municipality was declared **the National Champion** for 2023-2024.



OPCC Award Ceremony, June 2, 2024

On June 2, the Istanbul Metropolitan Municipality team was presented with the National Champion Award at the award ceremony held in Göztepe (Kadıköy) Özgürlük Park. IMM will compete for the International Championship after the National Championship.



OPCC 2023-2024 National Champion İstanbul

The Istanbul Metropolitan Municipality Institutional Greenhouse Gas Emission Inventory

Within the scope of the Istanbul SECAP project, a data template was created to gather data from relevant units in order to calculate the institutional greenhouse gas emission inventory to form the basis of the Sustainable Energy and Climate Action Plan, in order to see the share of the IMM in the urban greenhouse gas emission inventory, to carry out mitigation and adaptation efforts at this scale, and to create actions and road maps in a more customized way. The data covers the consumption of all IMM directorates, subsidiaries and affiliates. GHG emissions from these consumptions are calculated according to the same standard (GPC BASIC) and methodology as urban GHG emissions. The institutional greenhouse gas emission inventory was calculated in parallel with the urban greenhouse gas emission inventory by collecting data for 2019, since the base year of Istanbul SECAP is 2019 and in order to make an accurate comparison. The IMM's 2019 institutional greenhouse gas emissions were calculated as **1,543,303tCO_{2e}** and the IMM's per capita greenhouse gas emissions were calculated as **20.1 tCO_{2e}**.

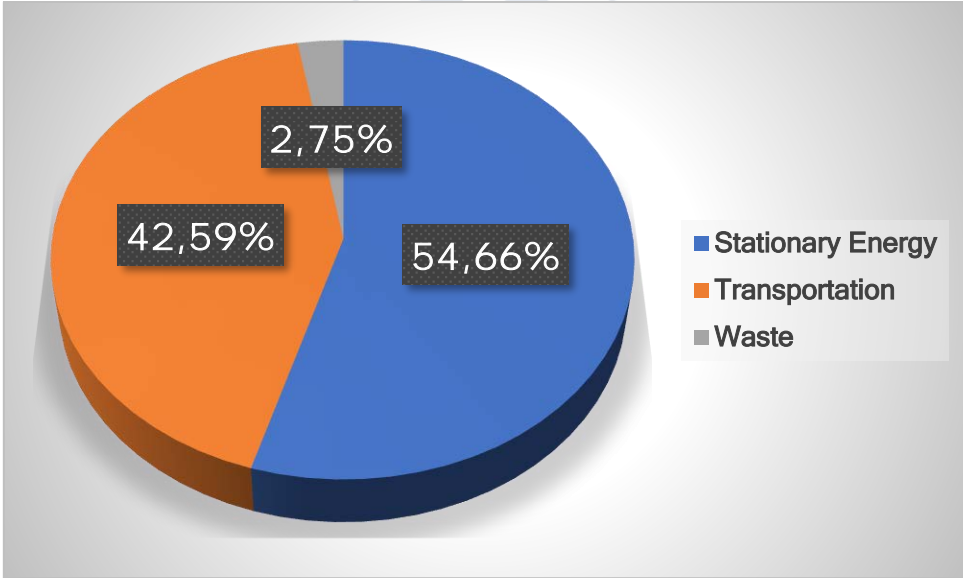


Figure 4. Istanbul 2019 Institutional Greenhouse Gas Emission Inventory: Sectoral Shares

Figure 4 presents the sectoral distribution of the institutional greenhouse gas emission inventory.

When the 2019 base year urban greenhouse gas emission inventory and the sectoral distribution of the institutional greenhouse gas emission inventory are compared, emissions from the stationary energy sector have the largest share. However, the share of emissions from stationary energy and transportation sectors are quite close to each other.

MONITORING THE SECTORAL ACTIONS IN THE ISTANBUL CLIMATE CHANGE ACTION PLAN

Stationary Energy Sector

According to the 2023 Türkiye Greenhouse Gas Emission Inventory Report, Türkiye's total greenhouse gas emissions in 2021 were 564.4 Mt CO₂ equivalent. Accordingly, total greenhouse gas emissions, which amounted to 524.00 Mt CO₂ equivalent in 2020, increased by 7.7 percent compared to the previous year.

In 2021, the largest share of total greenhouse gas emissions in CO₂ equivalent was **energy-related emissions with 71.3 percent**, followed by industrial processes and product use with 13.3 percent, agriculture with 12.8 percent, and waste sector with 2.6 percent (*The Climate Change Directorate of the Ministry of Environment, Urbanization and Climate Change*).

The stationary energy sector, which has the largest share in the Istanbul GHG Emission Inventory, includes electricity and fuel consumed in residential and commercial buildings.

In the Istanbul Climate Change Action Plan, the prioritized actions for reducing GHG emissions from the stationary energy sector and progress on these actions are provided below.

• Promoting measures to increase energy efficiency in all buildings

Solar Power Plants (SPP) Installation

The Istanbul Metropolitan Municipality aims to meet its electricity consumption primarily from renewable energy sources. In this context, it installs Solar Power Plants (SPPs) on the roofs of sports facilities, cultural centers and service buildings and aims to reduce energy use by conducting energy audits in service buildings.

Among renewable energy sources, "solar energy" stands out with its benefits of easy construction process and low operation/maintenance costs. Solar power plants are installed on idle building roofs to reduce energy costs.

Between 2019 and 2023, renewable energy works initiated under the consultancy of the Istanbul Metropolitan Municipality Energy Management and Lighting Directorate and Istanbul Energy, Inc. included **87** applications, and the installation of plants with a total of **15,460.6 kWp**. In addition, in 2024, the construction of a **SPP plant** with a total installed capacity of approximately **4000 kWp** is ongoing in the IMM service buildings.

Table 4. List of EYAM and Istanbul Energy Installed Solar Power Plants

Item	SPP Projects	Installed Power (kWp)	Year of Construction
Total Installed Power (kWp)		16008.3	
1	Metro İstanbul, Inc. Metris Station Solar Power Plant	8.4	2017
2	IMM Küçükçekmece Tracker Solar Power Plant and Wind Turbine	10.4	2017
3	KÜLTÜR A.Ş. Solar Power Plant	17.1	2020
4	IMM Hidayet Turkoglu Sports Complex Roof SPP	169.0	2016
5	IETT Stops SPP	240.0	2017

6	Bayrampaşa KİPTAŞ Houses Roof Type Solar Power Plants	1,255.2	2019
7	İSKOM Rooftop Solar Power Plant	19.8	2019
8	İSKİ İkitelli Rooftop Solar Power Plant	1,193.0	2019
9	İSKİ Büyükçekmece Land Type Solar Power Plant	218.4	2019
10	İSKİ Büyükçekmece Rooftop Solar Power Plant	459.0	2019
11	İSKİ Kağıthane Rooftop Solar Power Plant	768.8	2019
12	İSKİ Ferhatpaşa Rooftop Solar Power Plant	514.6	2019
13	İSKİ Kartal Rooftop Solar Power Plant	359.6	2019
14	İSKİ Eşrefbitlis Rooftop Solar Power Plant	257.3	2019
15	İSKİ Battalgazi Rooftop Solar Power Plant	238.7	2019
16	İSKİ Esenyalı Rooftop Solar Power Plant	127.1	2019
17	İSKİ General Directorate Garden Tracker SPP	6.0	2019
18	Hoşdere Park Land SPP	120.0	2016
19	Florya Presidential Residence SPP (İPA)	20.0	2021
20	Bayrampaşa EYAM SPP	105.0	2021
21	Elopar A.Ş. SPP	92.0	2021
22	Urtim A.Ş. SPP	576.0	2021
23	Arnavutköy Cemeteries Directorate SPP	27.7	2022
24	Esenler Sports Complex SPP	105.6	2022
25	Silivri Cemetery and Lavatory Directorate SPP	95.0	2022
26	Ataköy Women Coordination Directorate SPP	105.6	2022
27	Çatalca Fire Station SPP	63.4	2022
28	Bahçelievler Swimming Pool SPP	63.4	2022
29	Çakmak Swimming Pool SPP	112.2	2022
30	Sultangazi 75 th Year Swimming Pool SPP	105.6	2022
31	Şile Center for the Disabled SPP	215.2	2022
32	Başakşehir Center for the Disabled SPP	99.0	2022
33	Cemal Kamacı Sports Complex SPP	411.8	2022
34	Fatih Sports Complex SPP	550.1	2022
35	Pendik Tepeören Animal Shelter SPP	451.4	2022
36	Silivrikapı Ice Rink SPP	574.2	2022
37	Ataşehir Hospice Directorate SPP	48.0	2022
38	Başakşehir Center for the Disabled Phase 2 SPP	80.0	2022
39	Hoca Ahmet Yesevi Cultural Center SPP	304.0	2022
40	Güngören Wedding Hall SPP	305.0	2022
41	Aydınlar College SPP	81.0	2022
42	Öztiryakiler Industrial SPP	126.9	2022
43	Öztiryakiler Real Estate SPP	126.9	2022
44	Sancaktepe Villa SPP	8.0	2022
45	Büyükçekmece Villa SPP	10.0	2022
46	Ceta Form SPP	262.1	2022
47	Silivri Seymen SPP	273.0	2023
48	Avcılar WC SPP	8.6	2023
49	Büyükçekmece Municipality SPP	49.0	2023
50	Beylikdüzü Municipality SPP	127.0	2023
51	Topkapı City Park WC SPP	6.6	2023
52	Başakşehir Fire Station SPP	32.0	2023
53	Selimpaşa Fire Station SPP	28.0	2023
54	Başakşehir Fire Station SPP	32.0	2023
55	Esenler Turgut Reis Fire Station SPP	32.0	2023

56	Ataköy Women Coordination Directorate SPP-Phase 2	104.0	2023
57	Kumburgaz Fire Station SPP	105.0	2024
58	Sefaköy Swimming Pool SPP	117.7	2024
59	Tevfik Aydeniz Sports Complex SPP	78.5	2024
60	Muhsin Ertuğrul Theater Stage SPP	196.2	2024
61	Cem Karaca Cultural Center SPP	83.4	2024
62	Yeşilpınar Indoor Swimming Pool SPP	78.5	2024
63	İsmek-GOP SPP	88.3	2024
64	Bayrampaşa Swimming Pool SPP	186.4	2024
65	Bakırköy Ancillary Service Building SPP	312.0	2024
66	Cebeci Levazım Ayniyat Logistics Center SPP	484.0	2024
67	Fatih Ali Emiri Cultural Center SPP	85.0	2024
68	Dr. Enver Ören Cultural Center SPP	180.4	2024
69	Arnavutköy Boğazköy Culture and Sports Complex SPP	215.8	2024
70	Silivri Müjdat Gürsu Stadium SPP	103.0	2024
71	Kemberburgaz Temporary Animal Shelter SPP	100.3	2024
72	Tuzla Bahar Center for Combating Addiction SPP	457.8	2024
73	Şile Cultural Center SPP	157.0	2024
74	Şile Sports Complex SPP	225.6	2024
75	Bülent Ecevit Cultural Center SPP	91.6	2024
76	Yenidoğan Swimming Pool SPP	117.7	2024
77	Maltepe Fill Area Tennis Building SPP	60.0	2024
78	Maltepe Fill Area Parks and Gardens Directorate Building SPP	19.6	2024
79	Maltepe Fill Area Athletics Building SPP	39.2	2024
80	Sancaktepe Center for the Hearing Impaired SPP	98.1	2024
81	Maltepe Fill Area Water Tank-1	69.8	2024
82	Maltepe Fill Area Water Tank-2	78.5	2024
83	Maltepe Fill Area Water Tank-3	58.9	2024
84	Taha Akgül Sports Complex SPP	117.7	2024
85	Habipler Fire Station SPP	29.4	2024
86	Küçükçekmece Fire Station SPP	30.5	2024
87	Büyükçekmece Mimarsinan Fire Station SPP	22.9	2024
88	Kıraç Fire Station SPP	28.3	2024
89	Kemberburgaz Fire Station SPP	28.3	2024
90	Yenikapı Fuel Station SPP	50.0	2024
91	Maçka Earthquake Park Restroom Roof Solar Power Plant (SPP)	6.6	2023
92	Topkapı Earthquake Park Restroom Roof Solar Power Plant (SPP)	6.6	2023

Biomass Power Plants (BES) Installation

İstanbul Energy, Inc.'s Silivri Seymen Biomass Energy Plant inaugurated in September 2020 with an installed capacity of 17 MW, reached a capacity of 25 MW in December 2020, 37 MW in October 2021 and **44 MW** with 31 gas engines as of April 2024.

In addition, the internationally recognized *Gold Standard certification process* for the Silivri Seymen Biomass Power Plant and carbon reduction projects are planned to be completed this year.

Table 5. Istanbul Energy Seymen Biomass Power Plant Annual Energy Generation

Year	Generation (MWh)
2020	38,186.92
2021	207,277.28
2022	241,640.59
2023	240,472.51

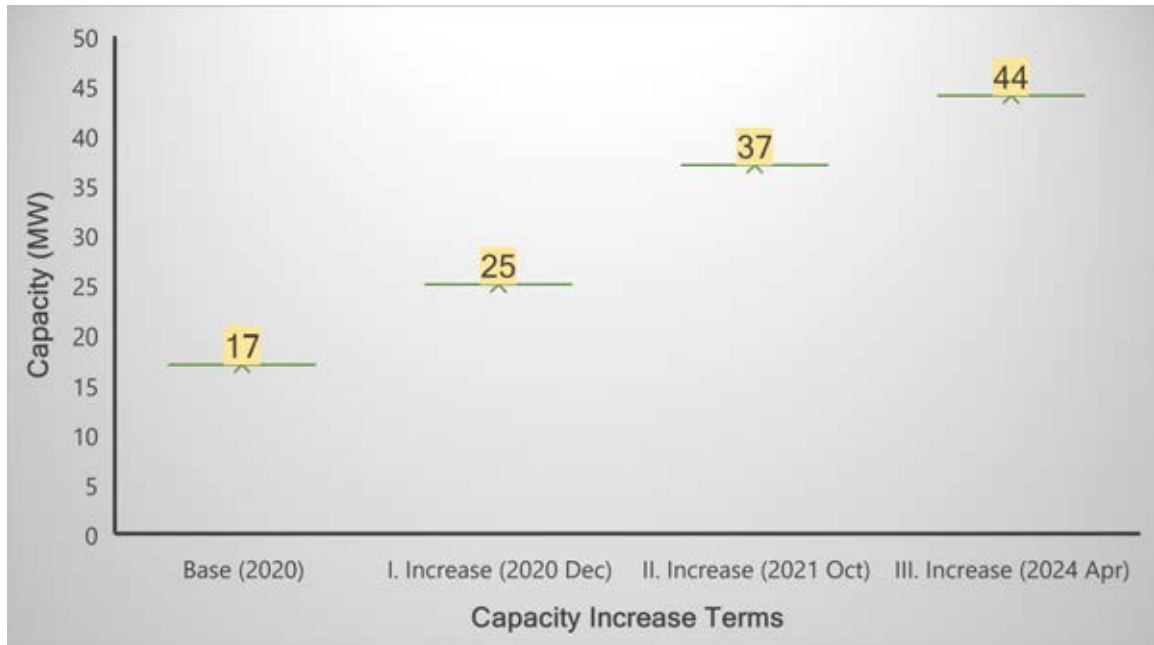


Figure 5. Seymen Biomass Power Plant Capacity Increases

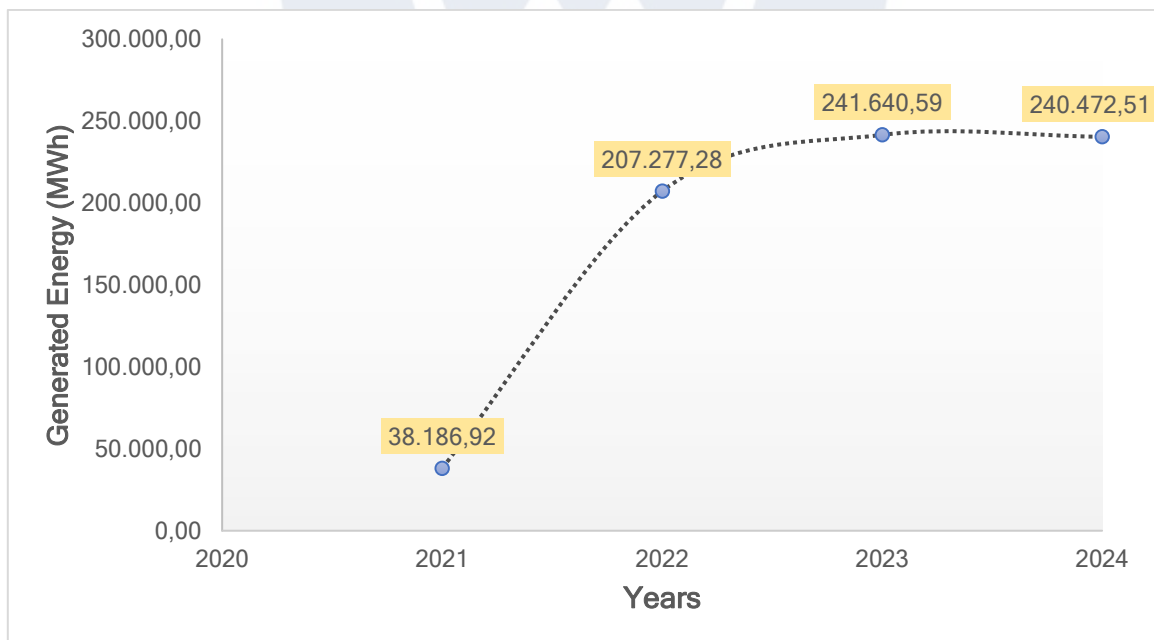


Figure 6. Generated Energy Amounts Over Years in Seymen Biomass Power Plant (MWh)



Istanbul Energy Inc. Silivri Seymen Biomass Power Plant

As part of the energy efficiency efforts, a total of 22 energy audits were conducted to reduce the energy consumption of buildings and facilities of the Istanbul Metropolitan Municipality and to drive the energy saving potential.

During the energy audit, the energy saving potential was identified for the IMM's 22 buildings by lighting, heating, cooling, pool systems, flue gas analyses, maintenance activities, electrical characteristics analyses, invoice analysis, ventilation system, carbon dioxide emission measurements and other factors.

Table 6. The IMM Buildings Audited for Energy

Item	District	Building Type	Location
1	Fatih	Administrative Building	Saraçhane Main Building
2	Bakırköy	Administrative Building	Bakirkoy Ancillary Service Building
3	Sultangazi	Sports	Cebeci Sports Complex
4	Şişli	Culture	Cemal Reşit Rey Concert Hall
5	Ataşehir	Service	Atasehir Hospice Building
6	Silivri	Sports	Silivri Kapı Ice Rink

7	Bayrampasa	Sports	Hidayet Turkoglu Sports Complex
8	Avcılar	Sports	IU Avcılar Sports Complex
9	Fatih	Sports	Fatih Sports Complex
10	Sultangazi	Sports	Hamza Yerlikaya Sports Complex
11	Ümraniye	Sports	Cakmak Swimming Pool
12	Bahçelievler	Culture	Yenibosna Dr. Enver Ören Cultural Center
13	Bahçelievler	Sports	Bahçelievler Hasan Doğan Sports Complex
14	Kartal	Sports	Kartal Hasan Doğan Sports Complex
15	Sultangazi	Culture	Hoca Ahmet Yesevi Cultural Center
16	Kartal	Culture	Bülent Ecevit Cultural Center
17	Güngören	Culture	Erdem Beyazıt Cultural Center
18	Çekmeköy	Sports	Çekmeköy Sports Complex
19	Pendik	Sports	Pendik Kurtköy Sports Complex
20	Eyüpsultan	Administrative Building	Alibeyköy Logistics Support Center
21	Esenler	Training	İSMEK Davutpaşa Pastry and Bakery Training Building
22	Şişli	Culture	Muhsin Ertuğrul Theater Stage

Other than in the Istanbul Metropolitan Municipality buildings, energy surveys were carried out in the buildings and facilities of subsidiary companies, other public institutions and the private sector under the consultancy of Istanbul Energy. Details are provided in Table 5 below.

Table 7. Other Buildings Surveyed for Energy

Item	District	Public/Private	Building Type	Location
1	Bağcılar	Public	Factory	İSFALT Mahmutbey
2	Sultangazi	Public	Factory	İSFALT Habibler
3	Ümraniye	Public	Factory	İSFALT Ümraniye
4	Tuzla	Public	Factory	İSFALT Aydınli
5	Ataşehir	Public	Garage	İETT Anadolu Garage
6	Avcılar	Public	Garage	İETT Avcılar Garage
7	Sarıyer	Public	Garage	IETT Ayazağa Garage
8	Beylikdüzü	Public	Garage	İETT Beylikdüzü Garage
9	Eyüpsultan	Public	Garage	İETT Edirnekapi Garage
10	Esenler	Public	Service Building	IETT Esenler Building
11	Beyoğlu	Public	Service Building	İETT Gümüşsuyu Building

12	Kadıköy	Public	Garage	IETT Hasanpaşa Garage
13	Küçükçekmece	Public	Garage	İETT İkitelli Garage
14	Kağıthane	Public	Garage	İETT Kağıthane Garage
15	Beyoğlu	Public	Service Building	İETT Karaköy Building
16	Kartal	Public	Garage	İETT Kartal Garage
17	Pendik	Public	Garage	İETT Kurtköy Garage
18	Beyoğlu	Public	Service Building	İETT Metrohan Building
19	Sancaktepe	Public	Garage	İETT Sancaktepe Garage
20	Sancaktepe	Public	Garage	İETT Sarıgazi Garage
21	Beykoz	Public	Garage	İETT Şahinkaya Garage
22	Fatih	Public	Garage	İETT Topkapı Garage
23	Kartal	Public	Garage	İETT Yunus Garage
24	Şişli	Public	Service Building	İMM Muhsin Ertuğrul Theater Stage
25	Şişli	Public	Service Building	İSTAÇ General Directorate Building
26	Eyüpsultan	Public	Factory	İSTAÇ Garbage Leachate Waste Water Treatment Plant
27	Eyüpsultan	Public	Factory	İSTAÇ Compost Plant
28	Eyüpsultan	Public	Factory	İSTAÇ Sterilization Plant
29	Eyüpsultan	Public	Factory	İSTAÇ Medical Waste Incineration Plant
30	Esenler	Public	Service Building	İSTON General Directorate
31	Tuzla	Public	Factory	İSTON Tuzla Factory
32	Arnavutköy	Public	Factory	İSTON Hadımköy Factory
33	Eyüpsultan	Public	Service Building	İGDAŞ General Directorate Campus
34	Avcılar	Public	Industry	İGDAŞ Ambarlı EÜAŞ Campus
35	Esenyurt	Public	Industry	İGDAŞ Esenyurt Rms-4 Campus
36	Esenyurt	Public	Industry	İGDAŞ Esenyurt Rms-1 2 3 Campus
37	Pendik	Public	Industry	İGDAŞ Pendik Dolayoba Rms Station Campus
38	Sultangazi	Public	Service Building	İGDAŞ Sultangazi Service Building Campus
39	Fatih	Public	Sports Complex	Fatih Sports Complex (Report Renewal)
40	Bayrampasa	Public	Sports Complex	Hidayet Türkoğlu Sports Complex (Report Renewal)
41	Şişli	Public	Industry	İSTAÇ

According to Article 7/- (2) of the "Regulation on Increasing Efficiency in the Use of Energy Resources and Energy" published in the Official Gazette on January 25, 2020; public buildings, commercial and service buildings, electricity generation facilities and industrial enterprises that are obliged to appoint an energy manager and organized industrial zones and industrial enterprises that are obliged to establish an energy management unit will establish and document a "TS EN ISO 50001 Energy Management System". Relevant institutions, organizations and businesses are responsible for keeping the energy management system up to date.

Within the scope of the regulation, ISO 50001 Energy Management System was established for **24** Istanbul Metropolitan Municipality buildings with an area of use of 10,000m² or annual energy consumption of 250 Tons of Oil Equivalent (TOE), and external audit and certification was carried out by an organization accredited by TÜRKAK for audit and certification.

As a result of the external audit, **24 IMM buildings** were certified for **ISO 50001 Energy Management System**.

Table 8. The IMM Buildings Certified for ISO 50001:2018 Energy Management System

Item	District	Building Type	Location
1	Bakırköy	Administrative Building	Bakırköy (Marmara Forum) Service Building
2	Eyüpsultan	Administrative Building	Alibeyköy Logistics Support Center
3	Sultangazi	Sports	Cebeci Sports Complex
4	Şişli	Culture	Muhsin Ertuğrul Theater Stage
5	Ataşehir	Service	Istanbul Ataşehir Hospice Building
6	Bahçelievler	Culture	. Enver Ören Cultural Center
7	Eyüpsultan	Sports	Yeşil Pınar Swimming Pool
8	Sultangazi	Sports	Hamza Yerlikaya Sports Complex
9	Bayrampaşa	Sports	Hidayet Turkoglu Sports Complex
10	Sultangazi	Culture	Hoca Ahmet Yesevi Cultural Center
11	Beyoğlu	Administrative Building	Kasımpaşa Ancillary Service Building
12	Küçükçekmece	Sports	Halkalı Swimming Pool
13	Fatih	Administrative Building	Saraçhane Service Building
14	Fatih	Sports	Silivrikapı Ice Rink
15	Şişli	Culture	Cemal Resit Rey Concert Hall
16	Güngören	Culture	Erdem Beyazıt Cultural Center
17	Fatih	Sports	Fatih Sports Complex
18	Kartal	Culture	Bülent Ecevit Cultural Center
19	Kartal	Sports	Hasan Doğan Sports Complex
20	Pendik	Sports	Kurtköy Sports Complex

21	Ümraniye	Sports	Cakmak Swimming Pool
22	Çekmeköy	Sports	Çekmeköy Sports Complex
23	Esenler	Sports	Hakkı Başar Sports Complex
24	Küçükçekmece	Sports	Sefaköy Swimming Pool



IMM ISO50001 Energy Management Certificate

ISO 50001 Energy Management Systems have also been established at the IMM subsidiaries İSTON A.Ş., İGDAŞ and İstanbul Halk Ekmek A.Ş.

Table 9. The IMM Subsidiary Buildings Certified for ISO 50001:2018 Energy Management System

Item	District	Building Type	Location	Year Established
1	Esenler	Administrative Building	İSTON - General Directorate Building	2022
2	Arnavutköy	Factory	İSTON - Hadımköy Factory	2022
3	Tuzla	Factory	İSTON - Tuzla Plant	2022
4	Eyüpsultan	Administrative Building	İGDAŞ - Provincial General Directorate Building	2023
5	Sultangazi	Service	İGDAŞ - Sultangazi Service Building	2023
6	Esenyurt	Industry	İGDAŞ - Esenyurt RMS Station 1-2-3	2023
7	Esenyurt	Industry	İGDAŞ - Esenyurt RMS Station 4	2023

8	Pendik	Industry	İGDAŞ - Pendik Dolayoba RMS Station	2023
9	Avcılar	Industry	İGDAŞ - Ambarlı EÜAŞ RMS Station	2023
10	Eyüpsultan	Factory	Halk Ekmek Edirnekapı Factory	2024
11	Sultangazi	Factory	Halk Ekmek Sultangazi Factory	2024
12	Kartal	Factory	Halk Ekmek Kartal Factory	2024
13	Arnavutköy	Factory	Halk Ekmek Ahmet İsvan Factory	2024

Energy Performance Certificate Activities

An Energy Performance Certificate (EPC) is a tool used to measure and improve the energy performance of a building, which helps building owners to achieve their sustainability goals. The EPC contributes to the promotion of policies and practices to reduce energy consumption by improving building energy efficiency. The EPCs issued under the consultancy of Istanbul Energy are presented in Table 7.

Table 10. Buildings with Energy Performance Certificates Issued by Istanbul Energy

Item	District	Location	Year Established
1	Bayrampasa	Hidayet Turkoglu Sports Complex	2017
2	Fatih	Fatih Sports Complex	2018
3	Pendik	Pendik-Kurtköy Sports Complex	2018
4	Fatih	Silivrikapı Ice Rink	2018
5	Avcılar	Avcılar Sports Complex	2018
6	Bahçelievler	Dr. Enver Ören Cultural Center	2018
7	Sultangazi	Hoca Ahmet Yesevi Cultural Center	2018
8	Güngören	Erdem Beyazıt Cultural Center	2018
9	Şişli	Cemal Resit Rey Concert Hall	2018
10	Ümraniye	Cakmak Swimming Pool	2018
11	Kadıköy	İstanbul Enerji Bostancı Construction Site Building	2018
12	Fatih	İstanbul Energy Yenikapı Fuel Station	2018
13	Üsküdar	İstanbul Energy Selimiye Fuel Station	2018
14	Fatih	İMM Saraçhane Main Service Building	2020
15	Esenler	İBB Davutpaşa İsmek Building	2021
16	Şişli	İMM Muhsin Ertuğrul Theater Stage	2021

We continue our renewable energy efforts also in the housing estates built by KİPTAŞ.

The Bayrampaşa Urban Transformation Project was designed within the framework of energy efficiency and sustainability principles and was completed in December 2021. Solar panels were placed on the roofs of the blocks to derive solar power. In addition to solar panels, the project includes innovative technologies such as smart garbage collection systems, smart water meters, smart building monitoring and lighting sensors, smart emergency systems, electric vehicle and bicycle charging stations.

Other KİPTAŞ projects under construction with energy efficient, sustainable and environmentalist principles are Pendik Arkatlı Houses and Tuzla Aydınlık Houses, Güngören Doğakent Houses, Bağcılar Kiraz Houses, Eyüpsultan Yeşilpınar Houses, Gaziosmanpaşa

and Haliç Urban Transformation Project which stand out with their gray water recycling system and solar lighting features.

Other Climate Change Efforts in the Stationary Energy Sector

Energy Efficiency Awareness and Sensitization trainings were provided for in-house staff and citizens.

2022-2023 Academic Year Number of Staff and Students Reached: 800

2021-2022 Academic Year Number of Staff and Students Reached: 1,500

2020-2021 Academic Year Number of Personnel Reached: 500.

Istanbul is Renewing Platform

Istanbul is Renewing is an online information and support platform that aims to transform the housing stock at risk in Istanbul into safe, earthquake-resistant, environmentally friendly structures, supported by the Istanbul Metropolitan Municipality's subsidiary companies KİPTAŞ, İstanbul İmar A.Ş. and BİMTAŞ. This platform aims to help and guide the process of renovating buildings that are considered to be vulnerable to a possible earthquake in Istanbul.

Criteria for initial approval of parcel applications:

- Must be privately owned,
- Must have been built before 1999.



“Bakırköy İş Bankası Blocks”, “Demircioğlu Apartment” ve “Kadıköy Ferah Apartment” are renewed within the context of “Istanbul is Renewing Platform” works

KİPTAŞ evaluates the applications made by the owners of the property on the platform regarding the parcels that meet these criteria. Projects are prepared in areas where 100% agreement is reached and submitted to the Istanbul Urban Development Workshop Directorate. Following the approval of the projects examined within the scope of the legislation, a new building license is issued and the transformation implementation is started under the control of KİPTAŞ.

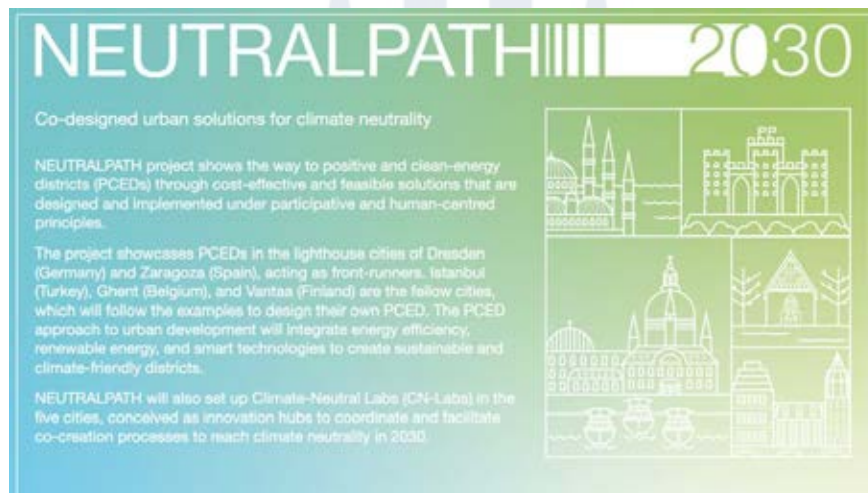
In the implementation areas, asbestos analyzes of the existing structure are carried out along with the processes described above. If asbestos is detected, asbestos is removed under the supervision of experts not to harm the environment and human health, and all documents

demonstrating that the building is ready for demolition are checked and a demolition license is issued in accordance with applicable regulations. After the Demolition License process, the building is demolished in an environmentally sensitive way and in accordance with the regulations.

Energy Sector European Union Projects

Neutralpath Project: Research and Innovative Actions to Support the Implementation of the Climate Neutral and Smart Cities Mission

The Istanbul Metropolitan Municipality participated in the Project proposal to be submitted to the Call for Proposals for Research and Innovation Actions (HORIZON-MISS-2021-CIT-02-02) to support the implementation of the Climate Neutral and Smart Cities Mission under the European Commission Horizon Europe Program "Positive Clean Energy Districts (PCED)" HORIZON-MISS-2021-CIT-02-04 with the "NEUTRALPATH" project.



The "NEUTRALPATH" project envisages that PCEDs designed and implemented with participatory and people-oriented principles will significantly contribute to the transformation of cities towards climate neutrality. The project will contribute to accelerating the process of reaching the targeted emission level for 2030 with cost-effective and feasible solutions.

Within the scope of the European Union NeutralPath project; we plan to establish the Istanbul Climate Neutral Laboratory;

- A feasible PCED plan will be developed for the Kadıköy Gas House area,
- Stakeholders' institutional capacities will be improved, citizens' awareness will be raised, and mutual understanding and commitment will be enhanced,
- The Climate City Charter will support the process towards a climate neutral Istanbul.

Dresden/Germany and Zaragoza/Spain, two cities with strong experience in urban transformation projects and a strong commitment to climate neutrality by 2030, will act as Lighthouse Cities from design to implementation and evaluation. Both cities aim to act as pioneers of this process by creating Climate Neutral Laboratories designed as Innovation Centers to promote faster scaling and replicability at the European Union level, and to ensure the direct participation of the three sister cities (Istanbul/Türkiye, Ghent/Belgium and Vantaa/Finland) in this process and to become main actors with their own PCED design and implementation after the project.

"NEUTRALPATH" will make a strong contribution to the European Union's climate goals through the Cities Mission Platform focused on knowledge and experience sharing and through its cooperation agreement with the main European Union initiative as H2020 SCC Lighthouse projects.

As participating cities aim to make their cities more livable, healthy, resource-efficient and climate-neutral by 2030, they aim to increase their capacity through new pilot projects to support their transition to climate-neutrality. The Positive and Clean Energy District (PCED) is a crucial element of the urban transformation process that should be at the heart of the decarbonization strategy of cities and aims to shorten the targeted time to become a climate-neutral city.



Circular PSP Project: Public Service Platforms for Circular, Innovative, Adaptive and Self-Renewing Municipalities through Pre-Commercialization Procurement

The Istanbul Metropolitan Municipality participated in the Project proposal to be submitted to the Call for Proposals for "Public Service Platforms for Circular, Innovative, Adaptive and Self-Renewing Municipalities through Pre-Commercialization Procurement" (HORIZON-CL4-2022-RESILIENCE-02-01-PCP) under the European Commission Horizon Europe Program HORIZON-CL4-2022-RESILIENCE-02-01-PCP with the following project.

The Circular PSP Project, funded by the European Union's Horizon Europe Program, in which the Istanbul Metropolitan Municipality Parks, Gardens and Green Areas Department is among the project partners with a leading role for the first time, **started on January 1, 2023**, and will last **40 months** with the participation of 12 stakeholders from 9 countries. The total budget of the project is €9.000.000,00. Istanbul Metropolitan Municipality's share of the Circular PSP project budget is **€5.8 million**.

The 40-month Circular PSP Project is a PCP (Pre-Commercialization Procurement) project with 12 partners from 9 EU member states, Türkiye and the UK. In the project in which the IMM and Technology Research and Development Industrial Products Information Technologies Industry and Tic. Inc. (TAGES) are among the partners, approximately €9.000.000,00 will be invested, €5,8 million of which will belong to Istanbul, in the development of green and digital public services in the process of transition to circular economy with a common vision for 7 cities representing a population of 45 million, namely Berlin, Sandyford, Maribor, London, Gulmaraes and Stockholm, as well as Istanbul.



The project aims to support business processes and flows to plan, procure and implement innovative circular economy solutions faster and more widely across Europe. In this context, it

is aimed to overcome the barriers to the following 3 main needs that require the use of existing and new digital technologies as public services:

- Digital tools to improve organizational and operational performance
- Data analytics using taxonomies for information and data exchange in the circular economy
- Eliminating language barriers and creating EU-wide know-how

According to the frameworks to be determined by the cities themselves in line with the requirements they need, the suppliers in the project are expected to produce solutions in the following areas with existing and new innovative digital technologies:

- Scalable platforms for city and SME users
- Circular economy data analytics using EU classification, open-connected data with artificial intelligence
- Natural language processing (NLP) to overcome language barriers across the EU

The envisaged solutions are addressed to all European authorities, including cities, ministries, agencies. The project will increase the volume of circular economy procurement and expand commercialization opportunities for green digital companies, leading to EU leadership in the circular economy.

Within the scope of the project, the IMM plans to carry out the following activities:

- Making the IMM buildings energy friendly, green certification system for buildings

(YES-TR) application and implementing and monitoring energy efficiency policies with energy consumption data,

- In the field of water cycle, the focus will be on data management; to address emerging challenges by creating solutions to problems to ensure sustainable management of water in all areas, and to recover and utilize the valuable resources found in unused and wastewater for sustainable resource efficiency,
- Türkiye's public sector needs to integrate and implement ISO 50001 Standards in its buildings and keep an updated list of electronic and energy-using goods. It is aimed to put the solution proposals into practice.

Waste Sector

In line with the Law No. 5216 on Metropolitan Municipalities, all mixed wastes are collected by district municipalities in Istanbul and brought to transfer stations for recycling and disposal at the facilities operated by the Istanbul Metropolitan Municipality.

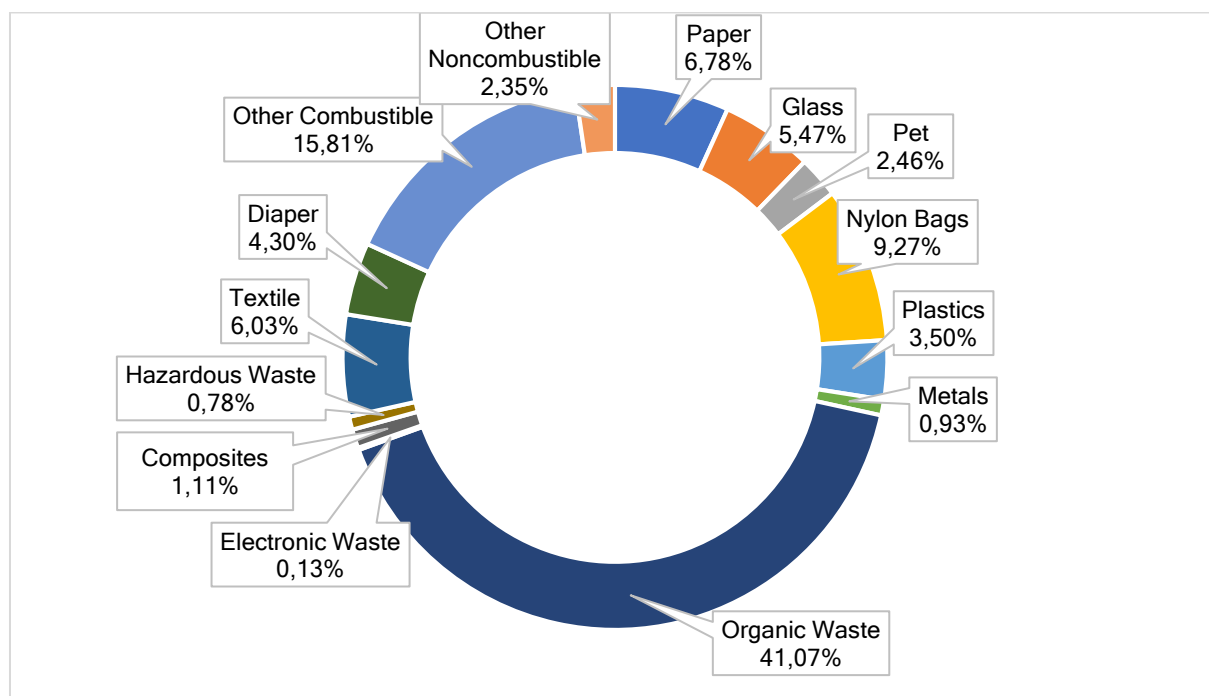


Figure 7. 2023 Waste Characterization Chart of Istanbul

The waste characterization of Istanbul for 2023 is presented in Chart 7.

In 2023, the total amount of waste brought to Recycling Facilities was **1,797,737 tons** and the ratio of waste processed at Recycling Facilities during the year was **28%**. Detailed numerical data on recycling facilities are presented in Table 11. Waste that is not sent to recycling facilities is disposed of in Landfills on the Anatolian and European sides.

In 2023, the total amount of waste sent to landfills was 5,424,841 tons and 72% of waste management was carried out by landfilling. Detailed numerical data of waste sent to landfills are presented in Table 12.

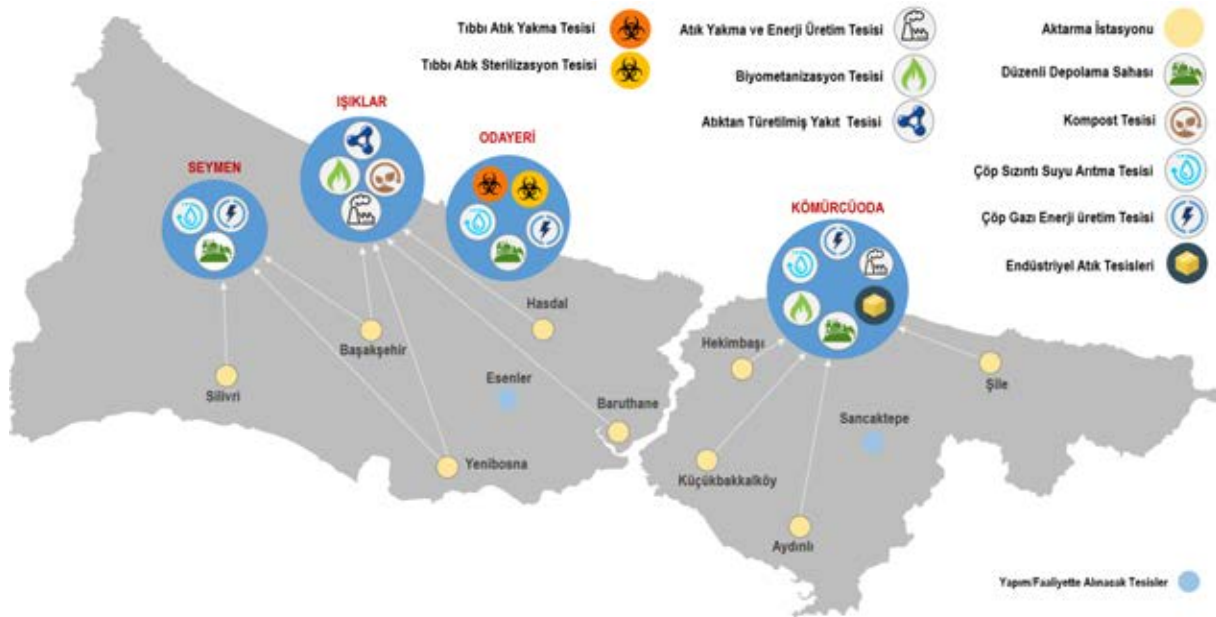
Table 11. Amount of Waste Brought to Recycling Facilities

Facility	Daily Waste Amount (tons)	Annual Waste Amount (tons)
Kemberburgaz Recycling and Composting Plant	425	155,106
Kemberburgaz Biomethanization Plant	39	14,120
Kömürcüoda Biomethanization Plant	955	348,634
Waste Incineration and Energy Generation Plant	3,055	1,114,918

Waste Derived Fuel (WDF) Plant	452	164,959
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Table 12. Amount of Waste Brought to Landfills

Landfill Site	Daily Waste Amount (tons)	Annual Waste Amount (tons)
Asian Side Landfill	6,484	2,366,567
European Side Landfill	8,379	3,058,274



All Facilities and Geographical Locations of Istanbul Metropolitan Municipality Where Waste Management Activities Are Carried Out

In the Istanbul Climate Change Action Plan, the prioritized actions for reducing GHG emissions from the waste sector and progress on these actions are provided below.

Developing programs to reduce or completely prevent the disposal of any food item during the processing, handling, storage, sale, preparation, cooking and serving of food

Within the scope of Zero Waste Awareness Raising activities, training and awareness raising activities are organized for different target groups on waste reduction, prevention, reuse, recycling and recovery of waste.

According to waste characterization, **44%** of the household waste generated is biodegradable (organic) waste. Accordingly, one of the most important aspects of waste reduction and recovery is the management of biodegradable waste.

Until 2021, district municipalities collected packaging waste separately at source, but since biodegradable waste could not be collected separately, it was brought to solid waste facilities together with other waste.

As of 2021, biodegradable waste from hospitals, universities, hotels, restaurants, social facilities, cafeterias of public institutions and organizations, which are high biodegradable

waste generators other than households throughout Istanbul, started to be collected separately by the Istanbul Metropolitan Municipality within the scope of protocols signed with district municipalities. The collected biodegradable wastes are processed at the Kemberburgaz Biomethanization Plant, which was commissioned in 2021, and electricity is generated from the biogas generated after anaerobic digestion.

Capturing landfill gas from landfills and using it as electricity, heating or transportation fuel, thus preventing direct methane emissions to the atmosphere

In Istanbul, with integrated waste management, Landfill Gas to Energy (**LFG**) Facilities, Biomethanization Facilities and Waste Incineration and Energy Generation Facility generate electricity to meet the energy needs of **2.56 million people**, contributing to renewable energy generation.

The gases generated from solid wastes in the landfills are collected through an active collection system with the help of special pipes. Uncontrolled gases generated through the energy production from landfill gas are disposed of without harming the environment and the risk of explosion is reduced.

There are **3 LFG Plants** with an active installed capacity of **22.6 MW** at Odayeri Landfill, **49.5 MW** at Kömürcüoda Landfill and **36.8 MW** at Seymen Landfill.

In 2021, the Kemberburgaz Waste Incineration and Energy Generation Plant, the **only** facility on the European side of Istanbul where mixed municipal waste is incinerated and disposed of in Türkiye, was commissioned. At the plant, where an average of **3,000 tons** of domestic waste is processed daily, waste is disposed of by direct thermal method (incineration) and **85 MWh** of electricity is generated from the combustion heat. The electricity generated at the plant is equivalent to the electricity needs of approximately **1.4 million people**, and the facility **reduces 1.38 million tons of CO₂ emissions** annually. This amount is equivalent to the withdrawal of 700,000 vehicles from traffic annually, in other words, it plays an important role in reducing Istanbul's carbon footprint by providing a reduction equivalent to the greenhouse gas emission reduction provided by 850 thousand trees.

As a result, waste-to-energy plants have the capacity to generate electricity equivalent to the energy needs of approximately 3.5 million inhabitants per year and reduce emissions by 3 million tons of CO₂ equivalent.

Optimizing waste collection operations (waste vehicle routes, waste collection hours) to reduce environmental impacts and total greenhouse gas emissions

In Istanbul, the process from separate collection of waste at source to bringing it to solid waste transfer stations is carried out by 39 district municipalities. Waste arriving at solid waste transfer stations is then transferred to the management of the Istanbul Metropolitan Municipality. The waste brought to the transfer stations is transferred from the garbage trucks of district municipalities to larger trucks and transported to recycling facilities and landfills.

Transfer stations reduce the number of vehicle trips and traffic load, thereby **reducing fuel-related CO₂ emissions**.

In addition to the existing transfer stations, Başakşehir and Hasdal Transfer Stations were commissioned on the European Side in 2021 and 2022. In this way, waste collection routes of district municipalities were optimized and waiting times at transfer stations were reduced.

Diverting discarded materials from landfills through recycling and transformation into new products

The Pop Machina project was initiated with the Horizon support in 2019, with the aim of treating, recycling and reducing the amount of institutional waste from Istanbul Metropolitan Municipality buildings and campuses sent to disposal facilities and supporting upcycling business ideas in the city within the scope of "Zero Waste" efforts, and the Circular Works Workshop was established in 2021.

Thanks to the Circular Works Workshop, institutional waste is not sent directly to landfills but is recycled and reused. At the same time, trainings and activities are organized in the workshop on transforming recyclable wastes such as wood and plastic into products and designs in order to raise citizens' awareness of zero waste and upcycling.

Other Climate Change Efforts in the Waste Sector

In 2023, İETT sent **3,090 tons** of waste as a result of its operations to disposal and recycling facilities. The **recovery rate** realized from the waste generated as a result of the operations is **99%** and the disposal rate is 1%. 400 tons of waste motor oil contributed to the production of **312 tons of base oil**, an import item, through refining.

Water and Wastewater Sector

According to the United Nations data, more than 2 billion people in the world live in countries experiencing high water stress. In the list published by the World Resources Institute in 2019, our country is included in the category of countries experiencing high water stress.

Water and wastewater management in Istanbul is carried out by İSKİ General Directorate. According to data shared by İSKİ General Directorate, water consumption in Istanbul has increased by 30% in the last 10 years in parallel with the ever-increasing city population.

İSKİ General Directorate works to predict the impacts of climate change that make itself felt on water resources as floods and droughts, to adapt water resources to the impacts of climate change and to reduce the vulnerability of water resources to the impacts of climate change. Within the scope of Istanbul Potable Water and Sewerage Master Plan;

- The studies on climate change and drought that were carried out so far in Istanbul were complied,
- Trends were analyzed
- Drought severity was analyzed and drought risks were assessed,
- The possible impacts of climate change and drought on existing and potential drinking water resources were identified,
- Actions and solutions for adaptation to climate change and mitigation of drought impacts were identified..



İkitelli Water Treatment Plant

Accordingly, in the Istanbul Climate Change Action Plan, the prioritized actions for reducing GHG emissions from the water and wastewater sector and progress on these actions are provided below.

Supporting wastewater recovery and reuse

In Istanbul, the annual amount of water supplied to the city is **1,117,064,116 m³** and the annual amount of wastewater treated is **1,646,072,144 m³**. Recovery of treated wastewater is of great importance in Istanbul, where the population and water consumption are quite high.



Ambarlı Advanced Biological Wastewater Treatment Plant

The recovery rates of highly treated wastewater in order to ensure that the water recovered by appropriate disinfection methods is used as process water in recreational areas and industry, and as washing water in streets and alleys are presented in Figure 8 by years.

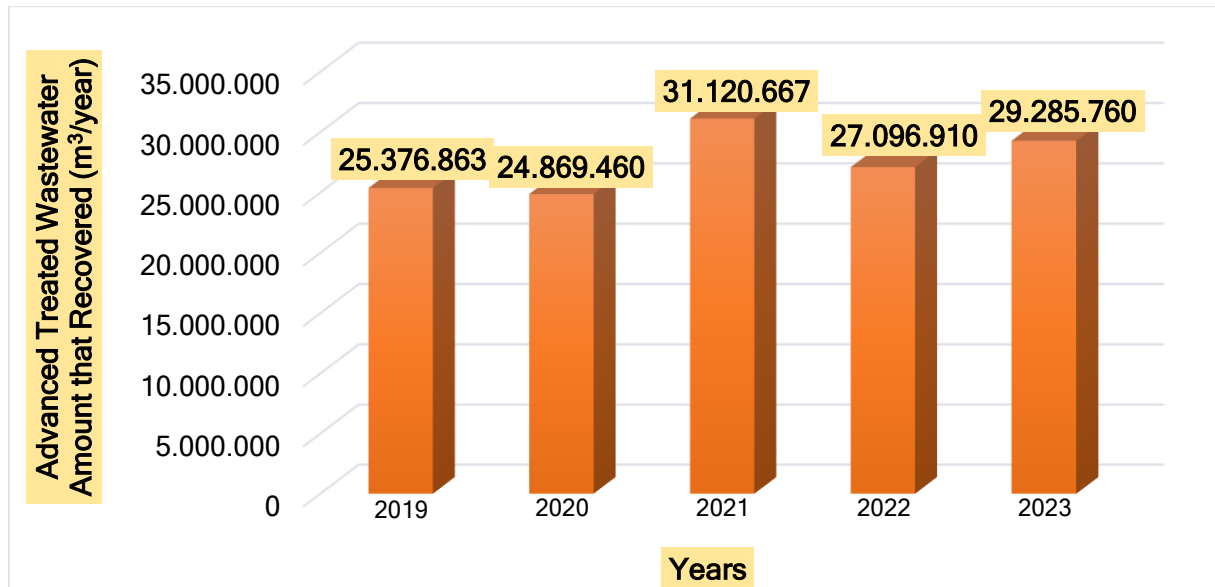


Figure 8. Changes in the Recovered Amounts of Advanced Treated Wastewater by Year

Managing supply lines and drinking water network with smart systems

Istanbul Water Control and Automation Center (İSKOM) started its operations as of 2019 to centrally coordinate and control with smart systems the journey of water from its source to its treatment, from its pumping to its distribution to the last subscriber, and after it becomes wastewater, until it is collected, treated and discharged again.

Accordingly, as smart grid applications; smart meter applications in isolated sub-regions, establishment and operation of the Potable Water Information Management System based on İSKABİS and receiving trainings covering critical issues related to operation, integration of SCADA supported pressure control with hydraulic modeling, micro-scale water loss analysis over isolated sub-networks were carried out.

Reviewing building and municipal regulations to promote water use reduction, on-site water reuse and recycling

Article 49 of İSKİ Subscriber Services Tariff and Implementation Regulation requires the storage and sanitary installations of gray/purple water networks in buildings with a total construction area of over 30,000m². During the building project review and approval phase by İSKİ, the approval of the storage and sanitary projects of the rainwater harvesting cistern and gray/purple water networks are carried out separately. Well water cannot be connected to the gray/purple water tank and gray/purple water usage is not charged a fee.

In addition, Article 54 of İSKİ Subscriber Services Implementation Directive specifies the principles regarding the use of gray water: Domestic water from showers, bathtubs and sinks will be utilized as a source of gray water, and water other than these (kitchen, washing machines and dishwashers, etc.) shall not be included in gray water harvesting. The recovered water is aimed to feed the toilet bowl reservoirs and urinals and the cooling tower, if any.

For the effective management and protection of our water resources adversely affected by climate change, the İSKİ General Directorate organized "Water Efficiency Workshops" with the participation of sector leaders, municipalities and NGOs. Following the workshops, reports were prepared on the situation determination and measures to be taken for the efficient use of water by improving cooperation with all stakeholders. Opinions and suggestions on making the necessary arrangements for water efficiency and water savings and updating the standards were submitted in writing to the relevant institutions.

Implementing rainwater sustainable solutions (rain gardens, use of permeable materials, storage, etc.)

Increasing clean water sources independent of the potable water network, rainwater storage underground solutions.

Article 51 of İSKİ Subscriber Services Tariff and Implementation Regulation aims to protect buildings from ground water and to harvest rainwater in parcels over 1,000 m², and by making as of 01.03.2021, the approval of rainwater harvesting project mandatory with a view to full implementation in buildings described therein.

Regarding Rainwater Harvesting, in accordance with the amendments to the Planned Areas Zoning Regulation on July 11, 2021, the mechanical installation projects of the buildings to be built on parcels larger than 2000 m² are required to include a rainwater collection system in order to collect the rainwater from the roof surface, filter it, if necessary, collect it in a tank for use in the toilet flushes of the building, and İSKİ takes this into account in licensing and new building connection procedures, with a view to full implementation in buildings described in the regulation.

Other Climate Change Efforts in the Water and Wastewater Sector

Reducing Water Loss-Leakage Rates

The rapid increase in water consumption harms the ecological balance. These conditions make it even more important to protect existing water resources and prevent leakage/loss of water during water transmission. One of the challenges in the fight to reduce water loss and leakage in Istanbul is the large amount of varying land elevations in short distances in the "city of seven hills". Land elevation differences necessitate the use of high pressure in water transmission and distribution systems. There are 143 pumping stations in Istanbul to deliver water to settlements at higher elevations.

In order to efficiently manage the existing system, the "Water Loss and Pressure Management Project" was put into implementation. With this project, it is aimed to create a digital twin of the potable water distribution system, ensure optimum pressure management, make the potable water system measurable and remotely controllable, install a field DMA (isolated sub-region) system, and achieve unmanned control of valves with machine learning. In addition, it is aimed to establish a SCADA system within the framework of the project through hydraulic modeling and water management software, and to manage the system at optimum quality with data mining.

The loss and leakage rate, which was 22.32% in 2019, was reduced to 20.52% by the end of 2021, 19.45% by the end of 2022 and **18.94%** in 2023 (Figure 9).

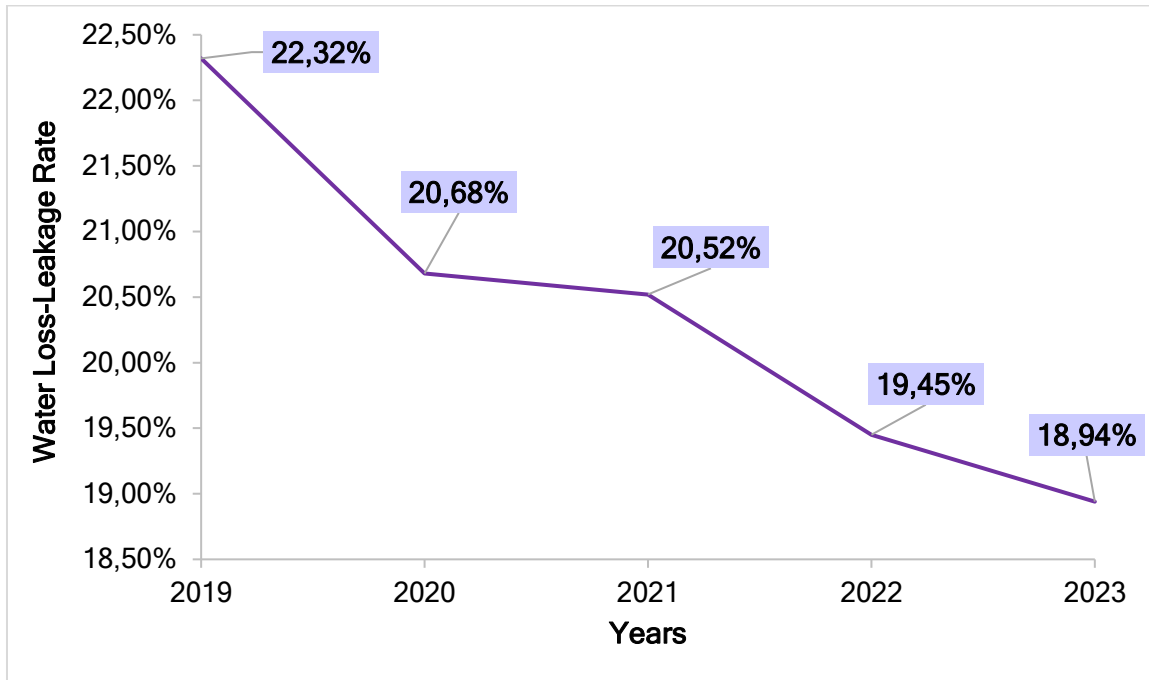


Figure 9. Changing in Water Loss-Leakage Rates over the years

Considering that the amount of water supplied to the city in 2022 was approximately 1.1 billion m³, an average of 20 million m³ of water was saved annually by reducing water loss by 2% in the last 3 years. The amount saved is equivalent to 2 times the total capacity of the Elmalı Dam, 3 times the total capacity of the Istrancalar Dam and 1.2 times that of the Kazandere Dam.

Thanks to the "Water Loss and Pressure Management Project", electricity consumption is also reduced. The reduction in electricity consumption not only brings economic benefits but also contributes to sustainable environmental management. Within the framework of the project, **8,752,963 kWh/year** savings were achieved.

Afforestation of Water Basins

In the lake absolute (0-300 m) protection areas of potable water basins, 2450 saplings were planted in 2023. Chart 10 and photos showing the number of trees planted by the İSKİ General Directorate between 2019 and 2023 are presented below.

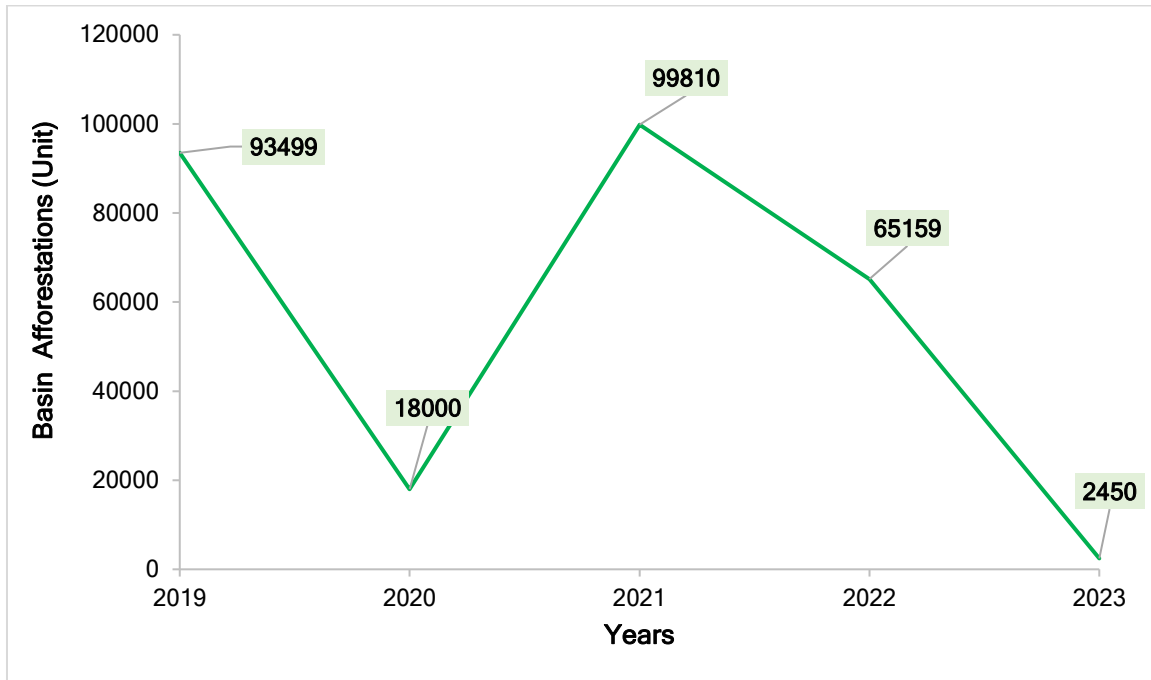


Figure 10. Water Basin Afforestations performed by ISKI





Afforestation works of drinking water basins carried out by İSKİ

Establishment of İETT Water Efficiency Unit

The **National Water Efficiency Campaign** was launched on January 31, 2023, by the Provincial Directorate of Agriculture and Forestry of the Governorship of Istanbul to cover water user groups from all levels of society in order to raise awareness of the issue by creating and

implementing policy strategy action plans for the participatory and multi-stakeholder evaluation of the solutions and progress made in order to adapt to the changing climate in our country, to protect water resources in terms of quality and quantity, and to ensure a sustainable method.

The İETT General Directorate has established a **"Water Efficiency Unit"** to ensure the effective and efficient implementation, monitoring, information flow and reporting of water efficiency mobilization targets. Periodic trainings are provided to the staff regarding the works to be carried out on water efficiency. Improvements are planned at points where water savings will be achieved.

The İETT General Directorate Wastewater Recycling Activities

The İETT General Directorate reuses the wastewater generated as a result of vehicle maintenance and washing activities by recycling it after treatment in its physical and chemical treatment facilities.

This way, approximately **60,000m³ of wastewater was recovered** during 2023. In the garages where the treatment plants are operated, the wastewater generated as a result of vehicle washing is analyzed as inlet and outlet water. The results of the analysis are reported every month.

"Istanbul Historical Water Structures" Culture Trips

The İSKİ General Directorate has inherited a rich water culture in Istanbul dating back to Roman, Byzantine and Ottoman times. Our historical waterways and structures, which are among the most important elements of this cultural heritage, did not only provide water to the city, but also were the channels where stories, architecture, art and engineering met in harmony. Our Administration has preserved this heritage, preserved these buildings through restoration, renovation and restitution processes and, when deemed necessary, restored their functions and made them available to the citizens.

In order to increase the number of visitors and awareness of our historical water structures such as arches, dikes, fountains and reservoirs, trips are organized to the water structures under the responsibility of our Administration. Trips are aimed to have the participants feel the importance of water more strongly by directly witnessing the effort given to water throughout history in Istanbul and thus raise the awareness of water saving.

As of April 1, 2024, 1083 people from different groups participated in a total of 74 trips.



“İstanbul Historical Water Constructions” Cultural Visits

"İSKİ Memory of Water" Short Film Competition

In order to raise awareness of water and environmental issues and to encourage artistic production on the subject, a short film competition was organized for the first time in 2023, open to university students, by making use of different perspectives and the impact of these perspectives. As a result of the jury evaluation, 3 short films were awarded in the short film competition, where Ahmet Mümtaz Taylan was the President of the Jury and many famous names were jury members. The call for the 2nd Memory of Water Short Film Competition has been made and preparations are ongoing.



"İSKİ Memory of Water" Short Film Competition Award Ceremony

Panel on "Impact of Climate Change and Drought on Istanbul's Water Resources"

On June 5 World Environment Day, the first panel on "The Impact of Climate Change and Drought on Istanbul's Water Resources" was held. In the program moderated by Prof. Dr. Bekir Sami KOCAZEYBEK, Member of the Board of Directors of İSKİ, Prof. Dr. Seval SÖZEN,

Member of the Scientific Advisory Board of the IMM, Prof. Dr. Murat TÜRKES, Member of the Board of Directors of Boğaziçi University Climate Change and Policies Application and Research Center and Faculty Member of the Department of Physics, Dursun YILDIZ, President of the Water Policy Association and Bülent SOLMAZ, Deputy General Manager of İSKİ participated as panelists.



Panel of “Effects of Climate Change and Drought on Istanbul’s Water Sources”

"Istanbul Historical Waterways" Photo Exhibition

Within the scope of a photography project launched in 2019 in cooperation with İSKİ and İFSAK to attract the attention of different sectors to water-related issues and to strengthen the bond between water and art, the memory of water was documented through photographs as it arose in Istanbul where different architectural approaches came together over the centuries. 3450 photographs selected from among nearly 10,000 photographs taken by İFSAK amateur artists over four years and four seasons were included in the project. The project, which features photographs of the rarest works of historical waterways in Istanbul including arches, dikes,

galleries, scales, reservoirs, settling ponds, cisterns and fountains, aims to increase the recognition of the structures that İSKİ has carefully maintained and restored. The exhibition held at Mecidiyeköy Art Center between December 19, 2023, and January 12, 2024, will also be exhibited in Türkiye and abroad in 2024. In addition to the exhibition, the project also published a photo book of a special selection of photographs.



“İstanbul Historical Waterways Su Yolları” Exhibition

Transportation Sector

The Istanbul Metropolitan Municipality has an environmentally friendly transportation management integrated with the goal of becoming a carbon neutral world city by 2050 with the perspective of "A People Oriented Accessible Istanbul". According to the 2021 IMM Annual Report, approximately 7.5 million people use public transportation in Istanbul daily.

The length of rail systems, which have an important share in environmentally friendly integrated transportation systems, increased from 154.25 km in 2019 to 367 km by 2024. The target is to increase the total length of rail lines to 622.15 kilometers by 2029. With the efforts so far, Istanbul has become the only city in the world to build 10 subways at the same time.

The Istanbul Sustainable Urban Transport Mobility Plan (Istanbul SUTMP/SUTP), prepared with the vision of a people and environment-oriented, innovative and inclusive transportation system for a sustainable and resilient future, was completed by the end of 2021.

The Istanbul SUTMP/SUTP covers quality of environment and life, social inclusion, accessibility and mobility in general. In addition to being Türkiye's first Sustainable Urban Mobility Plan, it is the first of its kind in the world for a city of this size.

One of the main objectives of the Istanbul SUTP is to have an "Environmentally Sustainable Transportation system".

"Transition to Low Carbon" is one of the main themes of the Istanbul SUTP, a theme that will play an important role in achieving Istanbul's commitment to becoming a carbon neutral city

by 2050. The objective of this theme is to ensure that Istanbul's transportation networks are environmentally friendly and to encourage individuals to adopt sustainable, active and healthy lifestyles.

The Istanbul Sustainable Urban Transportation Plan (SUTP) Phase II - Implementation Plan Project started on June 23, 2023, in line with and as a continuation of the Istanbul SUTP Phase I project work. Within the scope of the Istanbul SUTP Phase II Implementation Plan Project, there are pilot project preparations that mainly concern transportation systems and aim to reduce the long-term air pollution problem caused by transportation and its impacts on citizens' health.

Istanbul SUTP Phase II Implementation Plan Project is aimed to;

- implement "Low Emission Areas" in central areas to increase energy efficiency in urban transportation, reduce greenhouse gas emissions from transportation and improve urban air quality,
- increase the share of maritime transportation in public transportation,
- realign roads to encourage active modes of transportation such as walking and cycling
- conduct research to create "Bus Priority Lanes", which are widely used in the world to encourage public transportation, and "Healthy Streets", a sustainable transportation and people-oriented approach, and
- create road maps for the establishment of urban transportation resilient to disasters and possible future pandemics, with priority given to the expected Istanbul earthquake and climate change-induced floods.

In the Istanbul Climate Change Action Plan, the prioritized actions for reducing GHG emissions from the transport sector and progress on these actions are provided below.

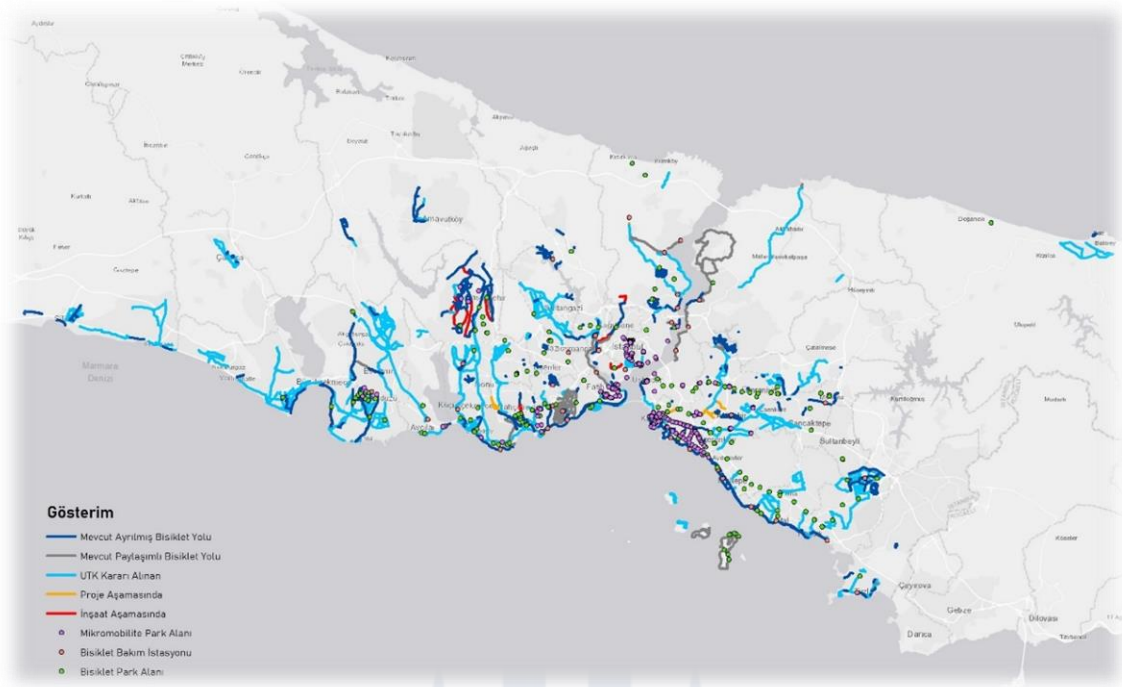
Purchasing new electric buses to render all buses electric

The İETT General Directorate provides public transportation services in Büyükdada, Heybeliada, Burgazada and Kınalıada with electric vehicles.

SGMS MASTIFF M4 brand **60 electric taxis (3+1 capacity)**, Green Car brand **15 taxis (3+1-person capacity)**, Green Car brand **40 buses (13+- person capacity)** and Cleanvac brand **50 electric taxis (3+1)** were purchased.

Making existing roads suitable for cyclists and creating new separate cycle lanes

In order to expand and increase the availability of bicycle transportation throughout Istanbul, existing roads are being made suitable for cyclists and new separate bicycle routes are created through planning and designing. As a result, the number of bicycle lanes that became operational between 2019 and 2023 is 339.15 km.



Istanbul's Current Segregated and Shared Bike Lane Density

Charging fees for certain areas with high traffic volumes

Between September 2019 and March 2022, one of the medium-term projects proposed by the Istanbul Sustainable Urban Mobility Plan (SUMP) is the implementation of a "Low Emission Area".

This is aimed to improve air quality by identifying an area where the access of vehicles that cause a decrease in air quality is restricted. In this context, implementation efforts are ongoing in Eminönü District of the Historic Peninsula.

Increasing park-and-ride areas

With the pandemic that started in 2020, in order to reduce the traffic and occupations in public spaces as a result of the increase in trips by private vehicles, thus providing space for sustainable transportation modes; the "Service Procurement for the Development of the Istanbul-wide Park and Ride System" was opened for bidding on May 16, 2023, to develop urban services that are in line with the "Istanbul Sustainable Urban Mobility Plan" and focus on the needs of urbanites in line with the goals, objectives and strategies of the Istanbul Parking Master Plan, to determine the location selection criteria of the Park and Ride System throughout Istanbul and to develop applications compatible with parking demand management.

In 2022, in line with the goals and strategies determined within the scope of the revised Parking Master Plan, Park-and-Ride Areas are planned in order to reduce traffic volumes, congestion and automobile dependency, and to encourage private car users to use public transportation, and existing areas are made more efficient.

Existing park-and-ride parking lots throughout Istanbul are operated by İSPARK.

By the end of 2023, services are provided **at 38 points with a capacity of 12,964 P+R points**.

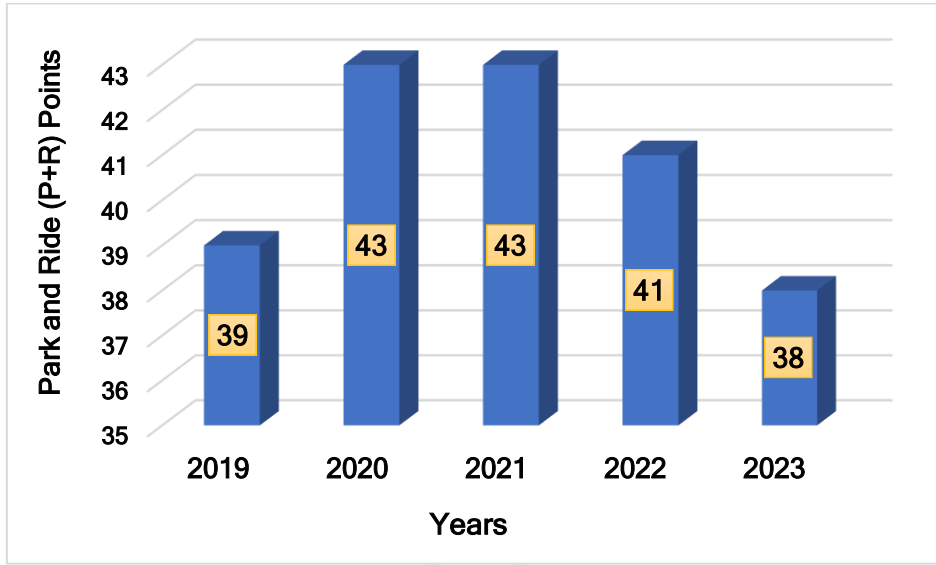


Figure 11. Park-and-Ride Parking Lots Operated by İSPARK

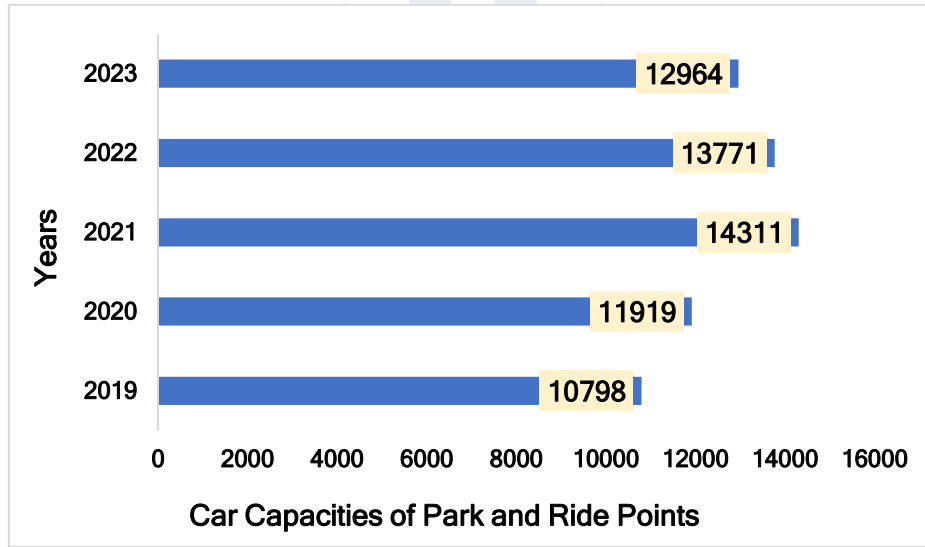


Figure 12. Total Vehicle Capacity in Park-and-Ride Car Parks Operated by İSPARK

In this context, a campaign was launched in August 2023 to reduce private car congestion in the Historic Peninsula. With the first application, drivers who parked their vehicles in the Yenikapı İSPARK area and paid using Istanbulkart were provided with free transportation to the center of the Historical Peninsula via the PD1 line.

As a continuation of the pilot study, Feshane Open Parking Lot, Merter Metro Open Parking Lot, Kirazlı Metro Open Parking Lot, Büyükçekmece Metrobus Side Parking Lot, Çekmeköy Metro Enclosed Parking Lot and Soğanlık Metro Open Parking Lot were included in the campaign on March 19, 2024. Drivers who parked their vehicles in these parking lots and paid with Istanbulkart were offered up to 50% discount in parking lots.

The fee policy (discount rates, etc.) of the park and ride parking lot will be determined and users will be informed through campaigns.



Campaign Posters Prepared to Popularize the Park and Ride Application in Istanbul

Since 2019, the Istanbul Metropolitan Municipality has completed the construction of 50 underground/above-ground parking garages with a capacity of 18,562 vehicles. The construction of 28 parking lots with a capacity of 10,249 vehicles by the Department of Public Works is ongoing and the construction of 1 parking lot with a capacity of 352 vehicles is at the contracting stage. In addition, there are 13 parking lots with a capacity of 3,233 vehicles whose projects are carried out by the Infrastructure Projects Directorate and the Superstructure Projects Directorate.

In addition, the vehicle capacity of open, enclosed and on-street parking lots operated by İSPARK A.Ş. increased from 94,332 in 2019 to 101,242 in 2020, 116,440 in 2021, 123,479 in 2022 and **123,406** in 2023. (Table 13). In addition, there are 45,103 parking lot spaces planned to be put into operation, achieving a total of **170,923** car parking spaces.

Table 13. Vehicle Capacities of İSPARK and IMM Constructed Parking Lots

	2019	2020	2021	2022	2023
Capacities of the parking lots operated by İSPARK	94,332	101,242	116,440	123,479	123,406
Capacities of the parking lots completed by the IMM	4,456	3,430	4,708	2,286	2,934

Table 14. 2023 Year-End Current Number and Capacity of İSPARK Parking Lots

Parking Lot Type	Number of Parking Lots	Parking Capacity (Vehicles)
On-street	329	20,272
Open	341	62,088
Enclosed	85	41,046
TOTAL	755	123,406

In addition, upper-scale planning is carried out for parking areas. Within the scope of the "Parking Master Plan" completed in 2022, the need calculated by the parking model throughout Istanbul was determined, managed with policies and actions, and the parking areas were identified pursuant to the principles and constraints in land use and transportation plans. Accordingly, the parking problem in Istanbul is being evaluated holistically. Efforts to increase parking lot capacity are ongoing.

Other Climate Change Efforts in the Transportation Sector

Within the scope of "ISO 14064 Greenhouse Gas Calculation and Verification Standard", İETT calculates the greenhouse gas inventory every two years and then verifies it by independent and authorized institutions.

In 2021, energy audits were conducted in our buildings, and areas were identified and reported that needed improvement within the scope of increasing energy efficiency.

In 2023, in order to ensure energy efficiency, **leakage measurements** in compressed air lines and flue gas measurements were made and reported.

Activities carried out within the scope of Sustainable Transportation and Micromobility Development

- Within the scope of sustainable transportation, a total of **1228** bicycle parking bars were installed in **176** bicycle parking areas.



Bicycle Park Area

- In order to support micromobility in sustainable transportation, a total of **829** micromobility parking bars were put into service in **163** micromobility parking areas.



Micromobility Park Area

- In order to meet the maintenance and repair needs of bicycles free of charge, **60** bicycle maintenance stations are in service throughout Istanbul.



Bicycle Maintenance Stations

- In order to improve micromobility in Istanbul, 1 **enclosed bicycle parking area** (Çırpıcı Bicycle Park) was built in Zeytinburnu public transportation transfer center.



Closed Bicycle Area (Çırpıcı)

- **Istanbul Bicycle House** hosts cycling events and İsbike cycling trainings at Yenikapı Coastline.



Istanbul Bicycle House

Istanbul Pedestrian Stops

In cooperation with WRI Türkiye Sustainable Cities, the Istanbul Metropolitan Municipality has become one of the member cities of the Partnership for Healthy Cities (PHC), supported by Bloomberg Philanthropies, partnered by the World Health Organization and implemented by the Vital Strategies. Within the framework of this partnership, the 'Pedestrian Stop - Parklet' project, developed to ensure road safety in urban transportation and to encourage alternatives such as cycling and walking instead of motorized vehicles, was approved by the funder 'Healthy Cities Partnership' and Istanbul's first pedestrian stop application was opened to the public in June 2022 on Halaskargazi Street in Şişli District. In May 2023, the 2nd Pedestrian Stop was put into service in Şişli, Yıldız Posta Caddesi by using our own resources and as of

2023, there are 2 pedestrian stops in Istanbul. Citizens' requests are collected via www.yayaduragi.ibb.istanbul in line with the variables of on-street parking, pedestrian density, traffic safety, transportation integration and land use.

Child Friendly and Safe Streets

In Istanbul, we continue our efforts to create Child Friendly Streets to change transportation behaviors starting from childhood. Three child-friendly streets were implemented in Maltepe's Yalı Neighborhood and Cevizli Neighborhood, and in Büyükçekmece's Hürriyet Neighborhood.

Yalı Neighborhood Tactical Urbanization Project was launched on October 11, 2021, within the scope of the Urban95 program of the Bernard van Leer Foundation in cooperation with the NACTO, Superpool, IMM and Maltepe Municipality. Within the scope of the project, Istanbul's first 'pedestrian priority road' with a speed of 20km/h was decided. Phase 2 of the two-phase project started within the scope of TÜBİTAK Horizon 2020 Program ERA-NET project EN-UAC (Urban Accessibility and Connectivity).

The 'Tactical Play Street' transformation fund project in the vicinity of Major Necatibey Primary School located in Kıbrıs Street, Cevizli Neighborhood, Maltepe district was implemented within the scope of the 'Street Transformation Rehearsal Implementation Support Program' in partnership with the Global Designing Cities Initiative, Street for kids, Superpool, Maltepe Municipality, Istanbul Planning Agency and Istanbul Metropolitan Municipality.

A solution was sought for the pedestrian safety problem in the immediate vicinity of Akçansa Mehmet Akif Ersoy Primary School in Eğitim Street, Büyükçekmece District and the street was transformed to enable disadvantaged primary school students to reach the school on foot. The project was implemented within the scope of the 'Street Transformation Rehearsal Implementation Support Program' of the Union of Marmara Municipalities, in cooperation with the Global Designing Cities Initiative and Superpool.

The Istanbul Metropolitan Municipality has been collaborating with the Partnership for Healthy Cities (PHC) since 2019 to improve road safety and create a walkable Istanbul. Within the scope of this fund, it is aimed to develop 'policies to solve the lack of safe, comfortable and accessible areas and transfer points on the home-school routes of students in Istanbul and to solve accessibility problems'.

Savings Efforts Under Sustainability in Subways

• Transformer Operation Scenario Change

Operation of low load transformers feeding train loads and station loads was rendered redundant, to save from idle operation and copper losses.

• Ventilation System Optimization

The operating parameters of ventilation equipment in technical rooms and passenger spaces were optimized so as not to adversely affect passenger comfort.

• LED Conversion

Motion-based dimmable LED conversion was started in passenger areas.

- **Business Scenario Change**

A reduction in energy consumption was achieved as a result of the use of 4 instead of 8 trips outside peak operating hours.

- **Train ECO Driving Mode**

Train driving on ECO driving mode started on the M4 Line outside peak operating hours.

- **Train Regenerative Recovery**

The energy generated due to the operation of the CER engines in the generator characteristic during the braking of the trains and wasted as heat energy by burning on the braking resistors was recovered.

Energy Efficiency and Green Technology in Subways

By integrating green technologies into rail systems, Metro Istanbul contributes to making urban public transportation more sustainable.

We diversified our electric energy efficiency efforts;

- The work for automatic shutdown of elevators, escalators and ventilation systems and their operation in saving mode during non-operational hours were completed on M1B, M2, M4 and M6 lines in 2023. The annual electric energy savings of the savings mode application through the SCADA system is 2.5 million kWh.
- Expansion of energy-saving practices by changing the use scenario in ventilation systems was completed in 2021 on M1, M2, M3, M4, M5, M6 and M7 lines. Annual savings amount to 1.4 million kWh.
- LED conversion applications started in lieu of discharge type lighting systems that completed their economic life. Appropriate methods were determined and product selection was completed in 2023, for LED conversion of lighting utilization equipment in all lines. In 2024, the procurement and installation process is expected to be completed. Annual savings are targeted to be 30 million kWh.
- Natural gas and water consumption, and tariffs are analyzed. Behiç Erkin Campus Natural Gas Savings, based on 2021, was 165,000m³ in 2022, and based on 2022, 110,000m³ by the end of 2023, totaling to 275,000m³.
- Energy savings by changing transformer operation scenarios and reducing losses in transformers operating with redundancy on M3, M4 and M7 lines as of 2021 through co-aging are ongoing. Thus, 1.9 million kWh is saved annually.
- Within the scope of the target for the installation of renewable energy production facilities, it is planned to organize a call for bidding in 2024 in accordance with the current conditions and applicable legislation by evaluating the negativities experienced in the SPP installation specification and tender process in 2023.

- The energy generated from the operation of the CER engines in the generator characteristic during the braking of the trains and wasted as heat energy by burning on the braking resistors was recovered.

- Optimization of Trips on M1B Yenikapı-Kirazlı/Bağcılar and M3 Kirazlı-Kayaşehir Central Metro Lines

Trips were revised to meet the high passenger demand in the morning and evening hours on M1B Yenikapı-Kirazlı/Bağcılar Metro Line and M3 Kirazlı-Kayaşehir Central Metro Line. As a result of the analyses, weekday and weekend schedules were revised to provide capacity in line with the demand. Thanks to these revisions, train sets were used more efficiently, reducing electricity consumption and maintenance costs. In addition, employee satisfaction was increased by increasing the rest periods of train drivers and the problem of not being able to board the trains at stations was minimized. A more efficient operation plan was created and savings were achieved by shortening the trip intervals.

- Creating a Disabled Vehicle Charging Station at 112 Stations

In order to provide a comfortable and safe travel experience for all our passengers, disabled vehicle charging stations have been set up at 112 stations for disabled passengers. The aim is to encourage disabled passengers to participate in urban mobility.

Circular Economy and Localization in Subways

- Electronic Card and Module Repair

Malfunctioning electronic cards and modules were repaired. Savings were achieved through the reuse of Electronic Cards and Modules.

- Localization Project

Since the block part of 105 LE8 Type compressors in the Metro Istanbul vehicle fleet could not be supplied individually, instead of purchasing the compressor completely, we saved by procuring the manufacture of the block locally.



Pictures regarding Circular Economy works

The İETT General Directorate converted a 2006 model diesel-powered bus into a **zero-emission and 100% electric** bus to reduce the negative impacts of public transportation on the environment. The bus can be fully charged in 1 hour and 45 minutes and has a **speed of 70 km/h and a range of 250 km**. In addition, the 22 kW batteries on the bus have the technology to be used in emergency and disaster situations.



Iett Bus Converted To Electric

- **"Commercial Pickup Truck (N1 Class) Permit Certificate"** is issued to commercial N1 class pickup trucks working in logistics activities throughout Istanbul and whose maximum loaded weight does not exceed 3.5 tons, and a discount is applied on the document fee if the vehicle is electric. In 2023, 252 of the 3936 certificates were issued for electric vans.
- The requirement of rail systems for a sustainable urban life is an undeniable fact. In today's world where the impacts of climate change are seriously felt, rail systems, which are the most environmentally friendly means of transportation among public transportation services, aim to move the city to the future by acting together with its residents.
- In order to provide a more livable and better-quality living space for future generations, Metro Istanbul, the IMM Rail System Operator, continues its efforts to reduce fossil fuel consumption in urban transportation and works to integrate with other low-emission modes of transportation with the awareness of the necessity of integration with other modes of transportation for sustainable urban transportation. Accordingly, it encourages the use of bicycles.
- Metro Istanbul works to reduce its environmental emissions in line with the United Nations Sustainable Development Goals and carries out improvement projects:
- In line with the strategic goal of "Increasing Efficiency in the Use of Energy and Natural Resources", the Company minimizes energy consumption and supports sustainable energy use. To this end, innovative technologies and energy recovery systems are used.
- In order to reduce the electrical energy consumed by Rail System Vehicles, the optimization of train speed profiles and regenerative energy recovery project were carried out and energy savings were achieved with optimized driving.

- Emissions from subway operations are calculated, regularly monitored and the performance is periodically reported. In addition, the amount of emission reduction resulting from the use of our services is monitored annually and shared with our stakeholders to raise awareness and encourage the use of rail systems.

Climate Change Awareness Efforts in the Transportation Sector

The Sustainable Mobility Training Center (SMTC) Project was completed in June 2023, served as a mini educational center in the schools and squares it visited, providing students and young people, or those who feel young, with information on sustainable transport, urban mobility, alternative modes of transport and pedestrian awareness.

In 2023, trainings on Energy and Environmental Management were provided in **48 schools**, reaching **5,407 students**. School visits will continue in 2024 as part of the SMTC project.

In addition, with the Solar Power Plant (SPP) installed at the İETT facilities; clean electricity was generated from renewable energy sources and 74 tons of CO_{2e} carbon emission reduction was achieved.



Images of Renewable Energy Projects Implemented

Efforts for Adaptation to Climate Change

Efforts for Combating Drought

The activities carried out by the Istanbul Metropolitan Municipality Agriculture and Aquaculture Directorate within the scope of combating global climate change and drought are as follows:

- A total of 22 ponds closed down in 2005 were transferred to the Istanbul Metropolitan Municipality from the General Directorate of Rural Services. Of these ponds, 18 are for agricultural irrigation and 4 are for animal drinking water. Since 4 of the ponds for agricultural irrigation became idle due to various reasons, **14 ponds** are used for irrigation. In these ponds, which are irrigated by the General Directorate of Rural Services with an open concrete canal system, high water losses occur due to the fact that the canals are both open canals and very old. In order to prevent the high water losses, we began work to convert the canals to a closed-circuit piped system and the irrigation system of 9 ponds was converted into a closed-circuit irrigation system. In these ponds, which were converted into closed-circuit piped systems, approximately **50% water** was saved.



Irrigation Work with Open Concrete Channel System



Hydrants Used in Closed Circuit Irrigation Systems

- Free drip irrigation hoses were provided to farmers for use in their fields and greenhouses. A total of **361.6 kilometers** of drip irrigation hoses were provided to 282 farmers in 53 neighborhoods in 12 districts. This support provided in 2022 aimed to reduce the amount of water used in production.



Drip Irrigation Hose Support

- In 2022, free bread wheat seed support was provided to our farmers. These seeds were selected from drought tolerant varieties developed by the Trakya Agricultural Research Institute and were given to our farmers after trial planting was performed under Istanbul conditions and yields were measured.

- In 2021 and 2022, our farmers were trained both practically in the field and by going to their neighborhoods and holding meetings, and in these trainings, the correct use of water in production was explained.
- In 2022, **Community Orchards** consisting of **182** plots of 16 square meters in total were established in Pendik, Kartal and Ataşehir districts and allocated to citizens living in the neighborhoods where the orchards are located for 1 year free of charge to produce their own vegetables. By planting vegetable seedlings given by the Agriculture and Aquaculture Directorate in these parcels, our citizens produced their own vegetables, touched the soil in the concretized city and found the opportunity to socialize in the orchards.



Community Orchards

- A total of **2989 rolls of mulch nylon**, each 500 meters long, were given free of charge to vegetable producers in Istanbul in 2023. With this support, it is aimed to expand the use of mulch nylon. The use of mulch nylon will both slow down the loss of water in the soil through evaporation and save water as there will be less need for irrigation.



Mulch Nylon

Efforts for Combating Vectors and the Impact of Climate Change on Vectors

- Vector control activities are carried out regularly under the responsibility of the Istanbul Metropolitan Municipality, Health Department, Health and Sanitation Directorate.
- Vector control and spraying services are carried out throughout the year in order to inform our citizens about vectors and the risks they carry, to inform them about the breeding and habitats of vectors, to provide training on ways to protect against vectors and the diseases they carry and the measures to be taken, and to combat vectors such as mosquitoes, houseflies and mice that transmit diseases. As a result of climate change, difficulties arise in the fight against vectors due to the development of mosquito larvae and rhubarb due to humid and wetlands in unpredictable areas as a result of heavy rains and/or groundwater withdrawal. For this purpose, vector control activities are carried out by 4 methods. These are;
 - Eliminating or rehabilitating possible breeding sources by acting in partnership with the necessary institutions and organizations or citizens through **physical fight**,
 - Controlling or eliminating breeding sources by raising awareness of our citizens about vectors through **cultural fight**,
 - Controlling mosquitoes during the larval stage using bactericides or natural predators through **biological fight**, and
 - Cold fogging by ULV method and controlling or eliminating rhubarb through **chemical fight**.

In addition, medical wastes generated in medical centers and Home Health Services are disposed of through İSTAÇ to protect the environment and, indirectly, the climate.

Efforts for Management of Extreme Weather Events

Since it has become an inevitable fact that meteorological events have a greater impact on daily life with global climate change, sensitivity on issues such as early warning, precautions and intervention against weather events that may adversely affect life such as floods and overflows, storms, hail, intense lightning and lightning activities are increasing day by day. With over 16 million inhabitants, Istanbul is one of the world's most populous metropolises. In addition to the routine flow of life in Istanbul, it is vital to make and implement a response plan that will minimize the dynamics of the city in times of emergency and disaster. For this purpose, **Disaster Management Information System (AKOMAYS)** was established by the Disaster Coordination Center (AKOM). This system, which includes remote sensing products such as meteorological radar and observation data, geographically based underpinnings, as well as many different sources and types of data such as vehicle tracking data, camera images, risk points and unit responsibility areas, aims to ensure the most effective and efficient management of the IMM's capacity in disasters and emergencies. Early warning systems operated by AKOM, which are monitored on a 24/7 basis against icing, flood and flood risks, have also been integrated into AKOMAYS. These systems are:

- **Automatic Weather Observation Stations (AWOS)** installed at 10 different locations in Istanbul
- **Flood Early Warning System (TEUS)** installed at 10 different points on 5 streams, and
- **Icing Early Warning System Stations** installed at 60 different locations to reduce the negative effects of precipitation and icing on the transportation network.

In addition, within the framework of the protocol signed with the General Directorate of Meteorology, the data of 40 Automatic Weather Observation Stations belonging to the GDM within the borders of Istanbul have also been integrated into the system.



AKOMAYS Meteorology Module



Automatic Meteorological Observation and Early Warning System Stations

Efforts for Food Safety

With the assurance of Istanbul Metropolitan Municipality, Istanbulites can access delicious, affordable and healthy meals through City Restaurants.

Table 15. City Restaurants

Item	Location	Year Opened
1	Arnavutköy	2024
2	Avcılar	2023
3	Bağcılar	2022
4	Çapa (Fatih)	2022
5	Çatalca	2024
6	Hisarüstü (Sarıyer)	2023
7	Küçükçekmece	2023
8	Pendik	2024
9	Sultanahmet (Fatih)	2023
10	Sultanbeyli	2022
11	Sultangazi	2024
12	Tuzla	2024
13	Ümraniye	2022
14	Üsküdar	2022

Table 16. Some Statistics on Urban Restaurants (End of 2023)

City Restaurants Served (by the end of 2023)	<ol style="list-style-type: none">1. Avcılar2. Bağcılar3. Çapa (Fatih)4. Hisarüstü (Sarıyer)5. Küçükçekmece6. Sultanahmet (Fatih)7. Sultanbeyli8. Ümraniye9. Üsküdar
Total Number of Covers Served in City Restaurants	1,610,658
Amount of food waste delivered to the Biomethanization facility in order to prevent Logistics Support Center food waste	404,775 kg

Other Works

Smart City Efforts

Amigos Project

The main objective of the EU funded AMIGOS project is to create, test, evaluate and maximize innovative urban mobility solutions together that are inclusive, safe, resilient and sustainable for European cities and beyond. The project will develop and test technological and policy solutions in 5 cities (Istanbul, Hamburg, Las Rozas, Lappeenranta, Gabrovo) and 10 urban areas as a means to increase the use of public transport, zero-emission and active-mobility modes, as well as improving safety and coexistence between different modes of transport. In this context, a pedestrianization project will be carried out and air and noise quality measurements will be carried out before and after the pedestrianization project in an area to be determined within the scope of the project. Data-based measurement and analysis methods will be used to prove how the pedestrianization projects planned for the city contribute to social life. The project also includes the improvement of existing bicycle lanes in the city. Thus, it is aimed to encourage the integration of cycling, which is a more active and sustainable mode of transportation, into urban life and to make it a safer mode of transportation.



AMIGOS Project

Decarmobile Project

DECARMOBILE, another EU funded project, is a 4-year project that aims to reduce carbon emissions and traffic congestion in the city by using electric cargo bicycles planned to be distributed from a consolidation center to be created by different stakeholders in the private sector with a collaborative business model. The main objective of the DECARMOBILE project is to develop city-specific solutions in accordance with the technical, environmental and local socio-economic contexts and to demonstrate the full potential of decarbonized last mile logistics.

The overall objective of the project is to make an unprecedented leap towards sustainable urban logistics and to mainstream green last mile logistics based on previous local experiences. Therefore, the focus is on the definition and implementation of a collaborative urban consolidation logistics framework, including relevant technological tools and methodology requirements for implementation and follow-up. This will accelerate the adoption and implementation of similar solutions in Europe and other regions.



Decarmobile Logo

Bicification Project

The one-year project aims to achieve a permanent transition towards green and active mobility through a patented hardware and software solution and a reward-based gamification system to reliably track cycling trips and reward cyclists. The main objective of the project is to support sustainable urban mobility and encourage citizens to use bicycles, one of the more active modes of transportation, through gamification. With the bicycle kit and mobile application used within the scope of the project, the applications of citizens who wanted to be included in the project were accepted and the bicycle rides of 500 selected participants were followed for 6 months. Incentive rewards, which can be redeemed at local stores that accept IstanbulKart, were loaded onto participants' IstanbulKart.

With a 6-month pilot study undertaken by Istanbul within the scope of the project;

- near 25,000 different bike rides (sessions) took place.

 - As a result, bicycles rode for nearly 350,000 km in Istanbul.

 - Nearly 60, 000 kg of CO₂ savings were achieved.

- nearly €30,000 were sent to IstanbulKart as rewards.

- 65% of the bicycle rides took place between 06:00-09:00 and 17:00-20:00, the peak hours of traffic in Istanbul.

- 31% of bicycle rides were for transportation between home-work and home-school.

- The average home-work and home-school distances of the users were found to be 9.78 km.



Bicification Istanbul Logo

Tech Istanbul

Tech Istanbul carries out its activities under the Istanbul Metropolitan Municipality Information Technologies Department, Smart City Branch Directorate. With its entrepreneurship programs, it helps startups grow fast and build scalable business models. It also provides support to stakeholders to make Istanbul stand out in the global entrepreneurship ecosystem, offers support mechanisms for the needs of entrepreneurs from idea to globalization, and brings technology fans together with the technology world.

In addition to the Pre-Incubation program, which supports early-stage technology startups from different sectors to have a fast-growing and scalable business model, Tech Istanbul offers PoC opportunities by bringing together startups with technology-based products for the needs of Istanbul with the IMM, its affiliates and subsidiaries through the Growth program.

Tech Istanbul Growth is open to applications from all startups that develop solutions to Istanbul's urban problems and have technological products ready for sale in the fields of mobility, environment & energy, mobile technologies, digital transformation. With the Growth program, entrepreneurs have the chance to test their products in Istanbul Metropolitan Municipality and have the opportunity to present their products to 16 million Istanbulites. In the last Growth'23 entrepreneurship call, a total of 168 startup applications were received, including 14 global startups, and 58 startups were brought together with the IMM, its affiliates and subsidiaries. Startups that received requests carried out PoC studies with the IMM, its affiliates and subsidiaries during the 6-week PoC process and 20 PoCs were successfully completed within the scope of the program. Some of the PoCs realized in the Environment & Energy vertical are described below.

- **3pmetrics:** It simplifies ESG analysis as well as carbon and water footprint accounting through its user-friendly SaaS platform and API services, enabling companies to automatically manage ESG analytics for their entire value chain in just one day.

In the study conducted with the Istanbul Energy, the institutional carbon footprint of the Istanbul Energy was calculated and reported with the data received by 3pmetrics from the Istanbul Energy team. Website: <https://www.3pmetrics.com/>

- **Weather Intelligence from the Cloud:** With its weather intelligence and climate-oriented solutions, it contributes to human and asset security by enabling its business partners to take measures against the impacts of the climate crisis as well as increasing financial and operational efficiency.

In the work carried out with the Smart City Branch Directorate, From the Cloud's historical weather forecast data was added to the traffic speed and density prediction algorithms developed by the Smart City Branch Directorate to verify the effects of weather on traffic and increase the consistency of the algorithm. In the work carried out with Istanbul Senin, the mini application of From the Cloud was integrated into Istanbul Senin and made available to Istanbulites. Website: <https://www.buluttan.com>

- **Cone-ForestGuard:** It is a system solution that performs forest and industrial fire detection and air analysis in outdoor areas.

In the work carried out with BİMTAŞ A.Ş., the Cone devices were installed in the IPA Campus, providing park smartening and digital twin data flow.

In the work carried out with the Istanbul Energy, the Cone devices were installed in Seymen Energy Production Facility to ensure continuous measurement of gas emissions.

In the work carried out in cooperation with the Smart City Directorate and Boğaziçi Yönetim, a fire detection system was installed in Kemberburgaz Urban Forest by placing Cone devices. Website: <https://www.kozalakyangin.com.tr>

- **Waste Log:** It is an application that makes it easier for users to recycle the waste accumulated in their homes and workplaces.

In the work initiated with İSTAÇ A.Ş. , it is planned to enable Istanbulites to report their household and workplace wastes through the Waste Log platform and to recycle them at İSTAÇ Recycling Workshop and to make the products produced by recycling them to the IMM Hospice residents. Website: <https://www.wastelog.co>

- **WorkyBe:** It is an AI-based energy and asset management platform that maximizes energy, equipment and team efficiency.

Starting with the Istanbul Energy, the project aims to increase energy, equipment and team efficiency by integrating the Istanbul Energy's solar energy systems into the WorkyBe system. Website: <https://www.workybe.com>

- **GreenConnection:** It is a next generation plant care and cultivation guide platform.

It was accepted into Tech Istanbul pre-incubation program and took part in training and mentoring processes. Website: <https://www.yesilbag.app>

-

Eyes of Solar: It offers integrated security systems based on solar panels.

In the work initiated with the Electronic Systems Directorate, it is planned to increase energy efficiency by using Eyes of Solar Devices.

In the work initiated with BİMTAŞ A.Ş., it is planned to install Eyes of Solar devices on street lighting poles and to operate these lighting poles with solar energy. Website: <https://www.ehbatechnology.com>

- **Akriha Technology:** It offers autonomous biotechnological systems based on artificial intelligence that clean the sea.

It was accepted into Tech Istanbul pre-incubation program and took part in training and mentoring processes. Website: <https://www.akrihatech.com.tr>

• **Continueapp:** It offers mobility vehicles and charging stations on a single platform.

It was accepted into Tech Istanbul pre-incubation program and took part in training and mentoring processes. Website: <https://www.devamapp.tech>

Some of the trainings and events held at Tech Istanbul Entrepreneurship and Technology Centers on Climate & Mobility are listed below.

Table 17. Tech Istanbul Climate & Mobility Training/Events

Program Description	Date	Content
From Digital Transformation to Green Transformation: Techniques, Implementation, Communication and Management Webinar	March 11, 2024	In the interactive webinar, the applicability of digital transformation in an environmentally friendly way and the management of green transformation in businesses were discussed in an innovative, practical and inclusive way.
Upcycling Ideathon	April 18, 2023 March 8, 2023	It was realized in cooperation with Tech Istanbul-Başakşehir, İSTAÇ A.Ş. and the Circular Works Workshop. The event aimed to create new functional and commercializable products from waste materials with the original design and innovative ideas of young people.
Combating the Climate Crisis and Entrepreneurship Program	June 20, 2023	In the program planned in cooperation with Tech Istanbul-Başakşehir, Avcılar Municipality Applied Solution and Innovation Center, causes of the climate crisis, its applications in local governments and examples of successful initiatives were discussed.
Webinar on Sustainable and Innovative Environmental	July 27, 2023	In the webinar held in cooperation with Tech Istanbul-Başakşehir and Istanbul Technical University

Technologies Compatible with Local Conditions		Environmental Engineering Club, Prof. Dr. Hayrettin Güçlü İnsel and Research Assistant Gökşin Özyıldız talked about the "Wastewater Treatment Plants Standardization Project".
Climate and Mobility Datathon	October 02, 2023 October 14, 2023	It was realized in cooperation with Tech Istanbul-Başakşehir, Özyeğin University and Sustainable Mobility Initiative.
Upcycling and CBA (Circular Business Workshop) Webinar	November 20, 2023	In the webinar organized by Tech Istanbul, waste management activities carried out within the IMM and the concept of upcycling were discussed.

IMM Open Data Portal

IMM Open Data Portal, which serves as a bridge between citizens and the city, was launched on January 18, 2020. Through the portal, data produced by the Istanbul Metropolitan Municipality and environmental organizations are shared with citizens. The number and quality of datasets on the website are increased by evaluating citizen requests received via the platform, examining global examples, and analyzing the IMM data pool at regular intervals. The projects resulting from the downloading, processing, transformation and evaluation of the data shared on the portal in different categories such as mobility, environment, energy, life, human and other categories by citizens create benefits in solving problems in many different areas and provide feedback that will create added value. Climate problems, environmental pollution, transportation problems, educational needs, artistic development areas can be given as examples of these problems.

The IMM Open Data Portal, which was launched as an output of the Istanbul Metropolitan Municipality's transparency and accountability policies, allows and encourages citizen participation, among many other benefits.



IMM Open Data Portal Web Site

Disaster-Focused Istanbul's Digital Twin Project

As of January 2023, the Istanbul Metropolitan Municipality Information Technologies Department Smart City Directorate has started to work on creating a digital twin of the city, which is one of the current smart city solutions in the light of technological developments. When the best examples in the world are examined in the literature, each city appears to have created a digital twin of it to solve its biggest problem. Since possible disasters pose a risk for Istanbul, we decided to create a disaster-oriented digital city twin. Accordingly, as a result of the interviews and analyses conducted with the IMM Disaster Affairs Department Disaster Coordination Center (AKOM), we started to work on the Disaster-Focused Istanbul's Digital Twin Project.

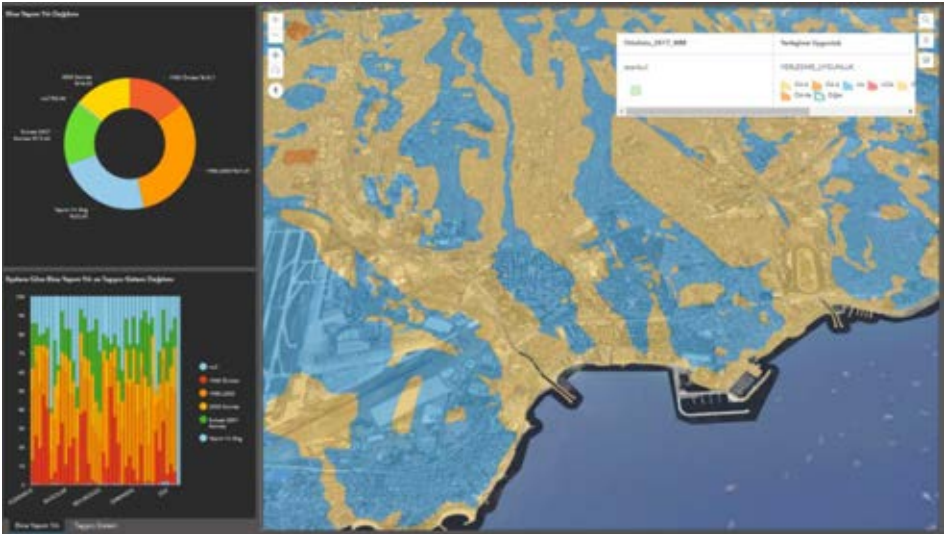
The most important key stakeholder and user of the first phase of the project, the disaster theme, is AKOM. In the development process of the project, in addition to the Geographical Information System Directorate of the same Department, the Map Directorate and the Earthquake Risk Management and Urban Improvement Department are among the important stakeholders. When the project is finalized, AKOM will have access to all spatial and spatially related data and all static and dynamic big data within the IMM in line with the needs of AKOM, and a holistic solution tool that produces much better contemporary results for decision-making mechanisms with various simulations will be produced.



Building Damage Probability Distribution-Probability of Complete Collapse

The project is now able to display the BIM model layers, earthquake analysis results and other necessary layers on a single web-based three-dimensional map with internal resources and continues to be developed. The requirements for creating a digital twin of the city were determined and a draft technical specification was prepared. Within the scope of the protocol signed with ITU; in addition to the ELER earthquake system, HAZTURK earthquake simulation software, which produces building-based predictions, and the analyses prepared for each fault were provided, and visualization and graphic representations were completed on the three-dimensional map. In addition, negotiations with the U.S. Trade and Development Agency (USDТА) and various U.S. companies with digital twin experience are underway to provide funding for licensing fees and consultancy for the project.

The concept of the digital twin of the city is quite broad and includes 8 smart city themes (mobility, environment, energy, security, people, life, governance, economy). After the disaster-focused activities are completed, it is planned to start the environment and transportation-focused phases that will provide the most social benefit.



Soil Structure-Suitable for Settlement

Koru Istanbul Strategy Document

The city's strategic road map has been defined by developing goals, objectives and actions in line with the vision of "Istanbul, a World City Where Life is Vibrant and Free in All Its Diversity, Where Everyone Lives Well" as set out in the Istanbul Vision 2050 Strategy Document. This document aims for Istanbul to be a resilient city living in harmony with nature, with a low carbon footprint, supporting a circular economy, adopting climate justice as a principle and having a high level of awareness in 2050. Within the framework of the theme of "The City that Protects the Environment and is Adaptable to a Changing Climate", as determined to realize Istanbul's vision, goals and basic policies for the year 2050, a road map was laid out for the protection of Istanbul's natural values, restoration and improvement of damaged areas, reduction of greenhouse gas emissions and all types of pollution with the goal of carbon neutrality, strengthening Istanbul's fight against the climate crisis, and reducing vulnerabilities by protecting the inhabitants of the city against the climate crisis.

Within this framework outlined by the Istanbul Vision 2050 Strategy Document, with a participatory planning approach, data collection, analysis and project development were completed for the sustainable management and development of Istanbul's natural and rural areas to protect the ecologically rich natural and agricultural areas of Istanbul and establish protection-oriented use balances to create a "Koru Istanbul Strategy Document".

It was aimed to create a road map for the protection of ecologically rich natural areas, with priority given to the northern regions of Istanbul where forest areas and water basins are located, and to ensure the establishment of sustainable natural resource use and development and protection-oriented use balances. By identifying various threats and destruction factors related to Istanbul's rural areas and local problems and deficiencies of rural settlements, priority areas and issues that need to be addressed in the field as a priority were identified, and goals, actions and projects were developed for the path to be followed to protect Istanbul's natural and rural areas and to eliminate problems and deficiencies.



Koru İstanbul Strategic Document Cover

Museum Gas House Events

Hasanpaşa Gas House, which started to serve in 1892 as the second gasworks of the Anatolian side and the last gasworks of Istanbul, met the lighting and fuel needs of the city for 101 years. In 1993, its production was terminated together with the other gas houses of the city as its technology became outdated because it could not meet the current need, and because its activities were considered to be hazardous to the environment and human health.

With 130 years of history, the historic building, one of Türkiye's most important industrial heritages, was abandoned after being used as an İETT garage for a while, but after years of public struggle, it was rescued and put into a comprehensive restoration process.

The Museum Gas House, reclaimed by Istanbul with a "living space" concept focused on culture and arts in the new period, opened its doors to Istanbulites on July 9, 2021.

The two buildings of the Gas House used as gas cleaning facilities were re-functionalized as a permanent exhibition/museum and the theme of the museum was determined as "Climate Crisis". The exhibition scenario and museum/exhibition design of the Climate Museum focusing on the climate crisis was designed and implemented.

Embracing all urban residents from 7 to 70, Museum Gas House aims to transform into an inspiring living destination for Istanbul by combining the power of its local heritage and public structure with a universal vision.



Museum Gazhane, Hasanağa-Kadıköy

2023 Climate Themed Events Organized at the Museum Gas House in 2023

Table 18 Climate-themed events organized at the Museum Gas House in 2023 and their contents

Agency	Content of the Event
The IMM Waste Management Exhibition (March 30 - April 17)	1. The IMM Waste Management Exhibition took place at the Climate Museum Columns.
Buğday Association & Kültür AŞ (March 28 - May 22)	2."Ecological City Meetings" took place at the Climate Museum once a week for 8 weeks.
Documentarist Festival Documentary Screenings (June 10-15)	In June 2023, climate-themed films were screened for a week.
Repairers Club & Not Blowing (June 5)	On June 5, World Environment Day, Wall-E was installed in cooperation with the Repairers Club and Not Blowing teams.
Cone Association (June 17)	T Workshop, 1st Climate Museum and Q-Deck areas hosted exhibitions and workshops as part of the Cone Association Children's Festival.
Green Thought Association (July 8)	"Green Economy Conference" was held in H Gölgelik.
Upcycle Istanbul Art & Design Festival (September 16-17)	The upcycling festival took place for the second time, using all the spaces in the Museum Gas House in categories of exhibitions, workshops, talks, market stands, film screenings and concerts.
Climate Volunteers (October)	The Climate Volunteers talked at T Workshop four times throughout October.
Gas House Environmental Volunteers (GHEV) & Earth Ecology Collective (November - December)	The GHEV and the Earth Ecology Collective organized film screenings and talks on ecology and climate crisis once a month at T Workshop. It continued until May 2024.

Other Works at the Museum Gas House

Children and Adult Workshops

Climate crisis awareness of Children and Adults was raised through artistic activities and games.

- Climate Crisis Awareness Workshop for Children (Ages 4-8)
- Heal the World with the Future of the World Game (Ages 9-12)
- Flora Walk for Adults
- Climate Crisis Workshop for Parents and Children (Ages 4-8)




Table 19. Summary Monitoring Table of Indicators Affecting Climate Change

Category/Sector	Indicator	Current Data and Year	Previous Year's Data	Change
Demographics	Istanbul Population (person)	15,655,924 (2023)	15,907,951 (2022)	-252.027 (persons)
Greenhouse Gas Emission	Istanbul Greenhouse Gas Emissions (tonCO _{2e} /year)	51,202,666 (2022)	50,637,989 (2021)	+564,677
Greenhouse Gas Emission	Greenhouse Gas Emissions per Capita (tonCO _{2e} /person. Year)	3.2 (2022)	3.2 (2021)	↔
Greenhouse Gas Emission	Annual Greenhouse Gas Emissions from the Stationary Energy Sector (tonCO _{2e})	32,793,362 (2022)	32,207,403 (2021)	+585,959
Greenhouse Gas Emission	Share of Stationary Energy Sector in Istanbul Greenhouse Gas Emission Inventory (%)	64.05 (2022)	63.60 (2021)	+0.45%
Greenhouse Gas Emission	Annual Greenhouse Gas Emissions from the Transportation Sector (tonCO _{2e})	14,928,640 (2022)	14,220,769 (2021)	+707,781
Greenhouse Gas Emission	Share of Transportation Sector in Istanbul Greenhouse Gas Emission Inventory (%)	29.16 (2022)	28.08 (2021)	+1.08%
Greenhouse Gas Emission	Annual Greenhouse Gas Emissions from the Waste Sector (tonCO _{2e})	3,480,663 (2022)	4,209,817 (2021)	-729,154
Greenhouse Gas Emission	Share of Waste Sector in Istanbul Greenhouse Gas Emission Inventory (%)	6.79 (2022)	8.32 (2021)	-1.53%
Stationary Energy	Number of the IMM Buildings with ISO50001 Energy Management System Established and Certified	24 (2023)	5 (2022)	+19 (qty)
Stationary Energy	Number of the IMM Subsidiaries' Buildings with ISO50001 Energy Management System Established and Certified	13 (May 2024)	9 (2023)	+4 (qty)

Stationary Energy	Installed Power of Installed Solar Power Plants (kWp)	16,008.4 (April 2024)	11,813 (2023)	+35.52%
Sink Area	Green Area per Capita (m ² /person)	7.88 (2023)	7.20 (2022)	+9.44%
Sink Area	Number of Trees Planted Per Year (Qty)	60,276 (2023)	59,181 (2022)	+1095 (qty)
Sink Area	Total Amount of Newly Built Green Areas Per Year (m ²)	1,884,241 (2023)	711,950.61 (2022)	+164.65%
Sink Area	Revised Green Area (m ²)	510,216 (2023)	510,994.18 (2022)	↔
Sink Area	Green Areas Maintained (m ²)	59,926,196.75 (2023)	57,780,087 (2022)	+3.71%
Waste	Waste Stored in Landfills Per Year (tons)	5,424,841 (2023)	4,377,359 (2022)	+1,047,482
Waste	Ratio of Waste Processed in Landfills (%)	72 (2023)	71 (2022)	+1%
Waste	Total Waste Sent to Recycling Plants (tons)	1,797,737 (2023)	1,768,369 (2022)	+29,368
Waste	Ratio of Waste Processed in Recycling Plants (%)	28 (2023)	29 (2022)	-1%
Waste	Organic (Biodegradable) Fraction of Waste (%)	44 (2023)	48 (2022)	-4%
Water and Wastewater	Number of Potable Water Treatment Plants (Qty)	24 (2023)	24 (2022)	↔
Water and Wastewater	Number of Wastewater Treatment Plants (Qty)	90 (2023)	90 (2022)	↔
Water and Wastewater	Water Supplied to the City Annually (Million m ³ /year)	1,117 (2023)	1,104 (2022)	+~13 Thousand m³

Water and Wastewater	Wastewater Treated Annually (Million m ³ /year)	1,646 (2023)	1,484 (2022)	+~162 Thousand m³
Water and Wastewater	Wastewater Recovered Annual (m ³ /year)	29,285,760 (2023)	29,623,315 (2022)	-337,555
Water and Wastewater	Dams Fill Level (%)	81.9% (April 2024)	37.33% (April 2023)	+44.57%
Water and Wastewater	Rainwater Line Length (km)	5,425 (2023)	5,255 (2022)	+170
Water and Wastewater	Potable Water Network Line Length (km)	19,978 (2023)	19,952 (2022)	+26
Water and Wastewater	Wastewater Canal Network Length (km)	17,046 (2023)	16,990 (2022)	+56
Water and Wastewater	Annual Water Consumption per Capita (m ³ /person. Year)	71.35 (2023)	67.51 (2022)	+3.84
Water and Wastewater	Loss-Leakage Rate (%)	18.94 (2023)	19.45 (2022)	-0.51%
Air Quality	Annual Average Levels of PM10 and PM2.5 in Air (µg/m ³)	38.6 and 19.3 (2023)	41.1 and 18.4 (2022)	PM ₁₀ : -6.08% PM _{2.5} : +4.89%
Transportation	Rail System Length (km)	367 (End of 2023)	297.22 (End of 2022)	+69.78
Transportation	Bicycle Path Length (km)	339.15 (End of 2023)		
Transportation	Number of Electric Public Transportation Vehicles (taxis and buses, respectively) (Qty)	125 and 40 (2023)	75 and 40 (2022)	+43%

Legends

	Positive Development		Negative Development		+	Increase		-	Decrease		↔	Unchanged
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