

SDG PROGRESS REPORT

on **SDG-7 AFFORDABLE AND CLEAN ENERGY**



SDG PROGRESS REPORT

ISTANBUL MEDENIYET
UNIVERSITY

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Sustainability Office**

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SDG Icons

<https://www.un.org/sustainabledevelopment/news/communications-material/>

Sustainable Development Report Maps

<https://dashboards.sdgindex.org/profiles/turkey>

SDG Statics

<https://unstats.un.org/sdgs/report/2023/progress-midpoint/>

<https://sdgs.un.org/goals>

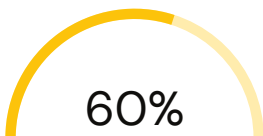


Between 1990 and 2010, the number of people with access to electricity has increased by 1.7 billion, and as the global population continues to rise so will the demand for cheap energy. A global economy reliant on fossil fuels, and the increase of greenhouse gas emissions is creating drastic changes to our climate system. This is impacting every continent.

Efforts to encourage clean energy has resulted in more than 20 percent of global power

being generated by renewable sources as of 2011. Still one in seven people lack access to electricity, and as the demand continues to rise there needs to be a substantial increase in the production of renewable energy across the world.

Ensuring universal access to affordable electricity by 2030 means investing in clean energy sources such as solar, wind and thermal. Adopting cost-effective standards for a wider range of technologies could also reduce the global electricity consumption by buildings and industry by 14 percent. This means avoiding roughly 1,300 mid-size power plants. Expanding infrastructure and upgrading technology to provide clean energy in all developing countries is a crucial goal that can both encourage growth and help the environment.



percent of global greenhouse gas emissions accounting by energy

675 MILLION

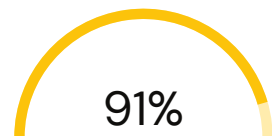
people still live in darkness



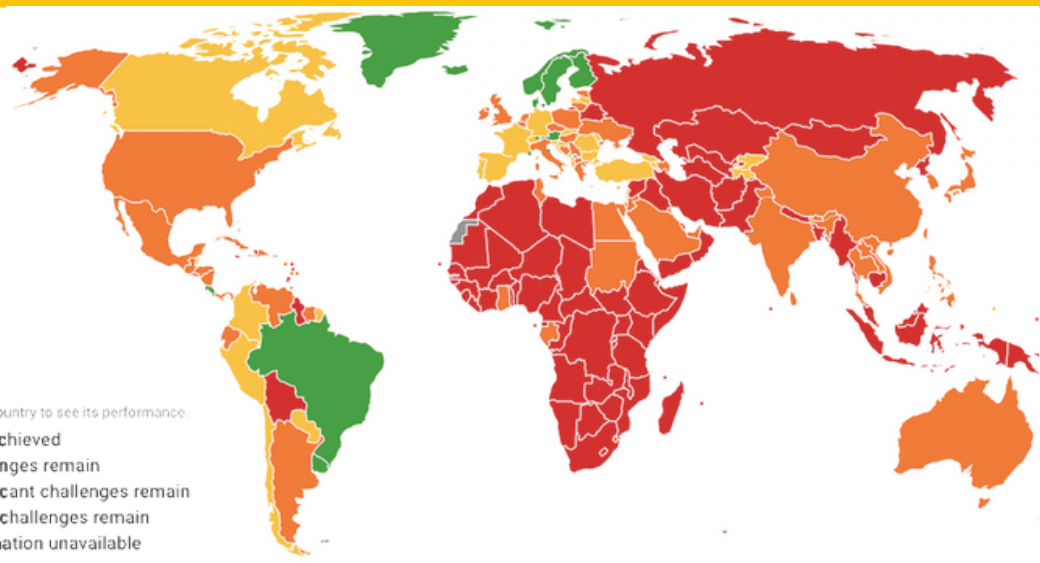
if current trends continue, 1 in 4 people will still be using unsafe and inadequate cooking systems in 2030

10.8 BILLION \$

public financing supporting clean energy in developing countries in 2021



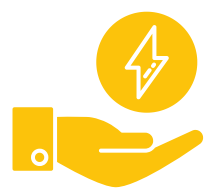
global electricity access rate



Legend
Click on a country to see its performance.
● SDG achieved
● Challenges remain
● Significant challenges remain
● Major challenges remain
● Information unavailable

0.144 ELECTRICITY

use density in IMU campuses (GJ/m²)



energy management unit to ensure energy efficiency

0.219

energy use density in IMU in 2022 (GJ/m²)



0.075 NATURAL GAS

use density in IMU campuses (GJ/m²)

0.004 FUEL

use density in IMU campuses (GJ/m²)

In accordance with the regulations of the Ministry of Energy and Natural Resources on energy efficiency and measurement, in buildings belonging to public institutions, all institutions must comply with these national regulations and have an energy manager.

As a public institution, Istanbul Medeniyet University created and put into practice [“Istanbul Medeniyet University Energy Directive”](#) in 2021 in order to regulate its energy management practices; to ensure effective and efficient energy use; to prevent energy waste; to reduce the burden of energy costs on the institution’s budget; and to increase efficiency in energy use for environmental protection. In addition, an Energy Management Unit was formed within the university to implement the directive instructions and energy managers were appointed for the institution. In 2022; building energy managers have begun to be assigned to buildings.

Energy-efficient Buildings and Renovation

Istanbul Medeniyet University has a policy on carrying out the energy management activities within the institution in accordance with the applicable national or international qualifications and standards that form the basis for certification. This policy was put into effect with [Istanbul Medeniyet University Energy Directive](#). In this context, in order to ensure and certify energy efficiency in the buildings used by our university, the Energy Performance Certificates that were put into effect as per the [Energy Performance of Buildings Regulation](#) were designated as our national standard and the International TS EN ISO 50001 Energy Management System as our international standard and a decision was made that all construction work would be carried out according to these qualifications and standards.

Istanbul Medeniyet University attaches importance to ensuring energy efficiency both in its newly constructed buildings and its older buildings that have been taken into reuse after refunctioning and renovation and carries out certain practices to increase energy efficiency for brownfields. For instance, much work has been

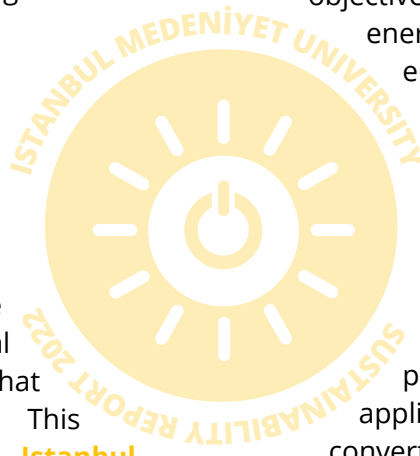
done to achieve efficiency in different types of energy in our administrative building in our Göztepe South Campus, which was taken over from the State Supply Office. Stone wool insulation was applied to achieve thermal insulation for the building and the existing lighting system was renewed with photocell lighting assemblies to reduce electricity use.

Plan to Reduce Energy Consumption

IMU primarily aims to use designs that will reduce the need for energy consumption. In line with this objective, our newly constructed campus buildings are designed to ensure natural lighting and ventilation.

Our secondary objective is to reduce the energy consumption in campus buildings and other activities of the university. In line with this objective, we rely on projects that guarantee energy efficiency or performance to reduce energy consumption and achieve efficiency in institutional buildings and annexes and have made this decision binding by [“Istanbul Medeniyet University Energy Directive”](#), which was approved in 2021.

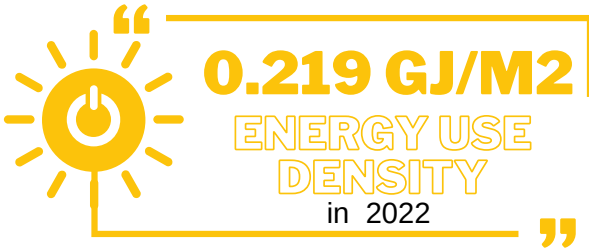
Furthermore, this planning has been put into implementation through several applications. For instance, frequency converters are used to reduce the energy consumed for water supply and thus energy consumption is reduced during the hours with less water consumption; electricity consumption in offices has been reduced outside working hours through the photocell lighting systems installed in the buildings; energy consumption from lighting has been reduced by switching to energy saving light bulbs in all the lighting systems; minimum lighting is used in the campus buildings for security purposes outside the office hours when building lights are automatically turned off to reduce electricity consumption from lighting; energy consumption for heating/cooling has been reduced through thermal insulation applied in all the buildings; and a homogeneous distribution of heat inside the buildings is achieved through the central heating system installed in all buildings to reduce energy consumption due to heating. In addition, the central heating system automatically turns off after working hours to prevent possible negligence and unnecessary energy consumption.



Energy Use Density

Every year, Istanbul Medeniyet University measures the total amount of energy consumed in the campus areas and depending on the campus related uses, and determines the energy use density. Energy usage density is used as an important guide in policies to be determined next year to reduce energy consumption.

As a result of all these strategies toward energy efficiency and reduction of energy consumption, the **energy use density** in 2022 for the six campus areas used by IMU with a total building area of 167,079 m² was 0.219 GJ/ m².



The **electricity consumption** in all the indoor and outdoor areas in all our campuses in 2022 was 6,699,521kwh with an electricity use density of 0.144 GJ/m² in 2022.

The **natural gas consumption** in all our campus areas in 2022 was 335,497 m³ with a natural gas use density of 0.075 GJ/m² in the same year.

The **energy equivalent of the fuels consumed** by the vehicles used by the institution in 2022 was 16,6 kiloliters.

Energy Type	Consumption in 2022	IMU Use Density in 2022
Electricity	6,699,521 kwh	0.144 GJ/m ²
Natural Gas	335,497 m ³	0.075 GJ/m ²
Fuels	16.6 kl	0.004 GJ/m ²
TOTAL	37,299 GJ	0.223 GJ/m²

As Istanbul Medeniyet University, we not only lead the society by carrying out activities to achieve Sustainable Development Goals (SDGs) at the institutional level and but also guide how the SDGs are applied at local, national, and international levels as a community through our collaboration efforts and support solving of problems through organizing scientific events.

IMU partnered with several universities and research centers from all over the world and hosted the **"10th European Renewable Energy Systems Conference"**. In the conference, where wind, solar, hydrogen production, hydro-, geothermal, solar condensation, fuel cell, energy harvesting and many other energy-related topics were discussed, developments in the sector, problems and plans for the coming years were also discussed. At the conference, the need to diversify resources by developing clean energy technologies was also emphasized in today's world where energy poverty is experienced.

The results of 232 studies from 59 countries were shared at the conference, where research and strategies to increase the share of renewable energy in energy consumption were discussed.



10th European Renewable Energy Systems Conference

09 May 2022

IMU partnered with several universities, associations and research centers and hosted **"2nd World Energy Storage Conference"** between December 18-21, 2022. Pointing out that energy storage will be a very important issue in today's world and in the future, the issues of increasing the facility capacity and efficiency of renewable energy resources were discussed at the conference.



Local Community Outreach for Energy Efficiency

IMU organized a workshop in partnership with Kadıköy Municipality to inform local people about the importance of energy efficiency and clean energy. **"ElectriCITY: Energy Preferences Game"**, a role game which the participants produce energy policies as decision makers in the energy production of the city, was played at the workshop. The workshop was organized by Ayça ÇELİKBİLEK, research assistant of our University's Sustainability Office, and geological engineer Gökhan SAPMAZ at the Kadıköy Environment Festival.

At the beginning of the workshop, general information about the energy system and energy management used in cities was given. In this context, the participants were informed about primary energy sources such as fossil fuels, renewable energy sources and other energy sources. Afterwards, technologies and facilities that convert these primary energy sources into usable energy were mentioned and it was stated which primary energy sources these facilities use to generate electricity and which end-use sectors such as trade, industry, transportation and residential can use this electricity. After all this information, the energy produced from which energy sources is used in which sector, the

amount of potential energy that each energy source can produce and the amount of lost energy (energy efficiency) were discussed with the participants via the Sankey diagram. Finally, in order to understand why energy policies are important for the environment, information was given to the participants about air pollutants, greenhouse gases and water consumption resulting from source selection in energy production. Thus, the participants were made to understand the importance of energy management in the global climate crisis.

In the second part of the workshop, the game, which is a simple simulation of the energy system in cities, was introduced to the participants and the rules of the game were explained. The game started by dividing the participants into five groups, each representing a city with different resources. The game, which was designed as a simulation of real life, was played as 6 different stages, in which carbon costs gradually increased,

carbon emissions were kept at a certain limit, water consumption was kept at a certain limit, and different political and economic conditions were developed for each group. At each stage, it was discussed how the changes in political, economic and environmental conditions reflected on the energy policies produced by the groups and how these policies were reflected on the environmental costs in addition to the construction and operating costs.

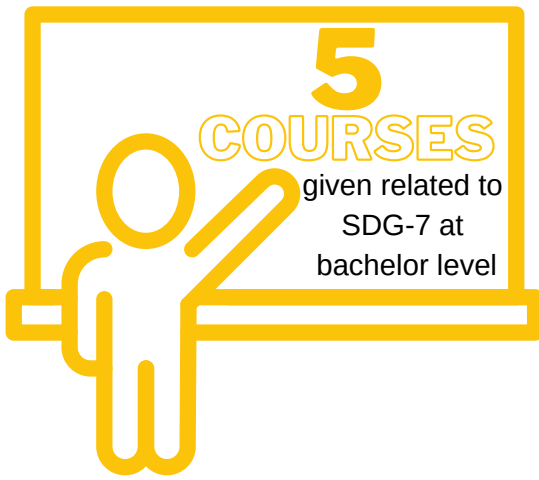
At the end of the workshop, the total cost (installation+operation+environmental) of the energy policies produced by each team for their city was calculated. The workshop ended with the announcement of the first three teams that became low-carbon society at the end of the 6 stages.



LEARNING

Learning processes are key in achieving SDGs. Thus, universities play a critical role both by training professionals who will prioritize SDGs in their future practices and by increasing local, national, and global capacity to successfully achieve SDGs. As Istanbul Medeniyet University, we are aware of our critical role and therefore, we primarily inform our students, the leaders and decision-makers of the future, about the Sustainable Development Goals through course contents, co-curricular activities and student club activities and strengthen their awareness. For this purpose, each of our faculties and departments prepares SDG-related course contents, including courses that address the Sustainable Development Goals holistically, as well as specific contributions that can be made by the expertise of the relevant professional field in which they provide training. In 2022, 5 bachelor degree courses related to SDG-7 were given at IMU.

Some of these are listed below.



Faculty	Course
Arts and Humanities	PSİ 414 - Selected Topics in Clinical Health Psychology
Dentistry	TEB106 - Medical Genetics
Education Sciences	ECE018 - Pediatric Health and First Aid
Engineering and Natural Sciences	BYM416 - Micropollutants, Treatment and Effects on Human Health
Medicine	TFS104 - Cancer Biology

IMU Science and Civilization Club held the “Mediterranean and Black Sea in a Geopolitical and Geoeconomic Context” panel on Wednesday, May 18 at 14.30 at Hasan Polatkan Conference Hall of Ziraat Bank Library, with the participation of experts in their fields. In the first session, Prof.Dr. Yaşar SARI from Ibn Haldun University, talked about the energy equations in the Black Sea. He stated that the energy resources in the Black Sea will have a great impact on our country’s energy policy and economic development. The second session was held with the participation of Prof.Dr. Cüneyt YÜKSEL from Istanbul University. YÜKSEL discussed the Eastern Mediterranean Crisis in international law. He evaluated what international legal remedies might be for the extraction of energy resources in the Eastern Mediterranean, and expressed his ideas on how countries should behave.

The International Relations Club of our University held a conference event called **“Black Sea Geopolitics and Security Issues”** on Tuesday, December 6, 2022 at Hasan Polatkan Conference Hall of Ziraat Bank Library of Istanbul Medeniyet University. The conference aimed to provide the audience with information about the geopolitical position of the Black Sea and the security problems in the region, and to gain new perspectives. In the second part of the event, Istanbul Aydın University faculty member Asst.Prof.Dr. Filiz KATMAN delivered her speech titled “Russia - Ukraine War and Energy Security”. She explained how energy resources such as natural gas, which gained importance with the war, changed the supply-demand balance in international trade and energy governance.



Black Sea Geopolitics and Security Issues Conference



The academic staff members of our university carry out research on ensuring universal access to modern energy services; increasing the share of renewable energy in the global energy mix; doubling the rate of improvement in energy efficiency; supporting access to clean energy research, technology, and investments; and expanding and upgrading the energy services for developing countries, publish the results of their research and share them with other researchers, decision-makers, stakeholders, and the public as a foundation for policies toward achieving SDGs.

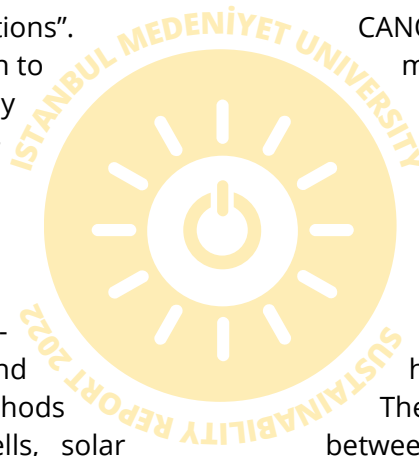
The book chapter on clean energy technologies, titled **“Visible Range Activated Metal Oxide Photocatalysts in New and Emerging Energy Applications”**, co-authored by Prof.Dr. Çiğdem ŞAHİN, head of the Basic Sciences Department of Engineering at the Faculty of Engineering and Natural Sciences of our University, was published in the book “Green Photocatalytic Semiconductors-Recent Advances and Applications”. The study aimed to draw attention to the use of environmentally friendly renewable energy sources by mentioning some new and developing energy sources. In the chapter, new and developing energy applications using metal oxide photocatalysts were addressed. The latest developments in environmentally friendly and energy efficient production methods used in the production of solar cells, solar fuels and photocatalytic hydrogen, in which solar energy is used as a source, were highlighted. This research contributed to attracting attention to solar energy as a clean and renewable energy source among renewable energy systems. In addition, it was aimed that the study would benefit research in the field of clean energy technologies.

Res.Asst.Dr. Cansın Kemal CAN’s book chapter on the economic effects of energy subsidies titled **“Implications of Energy Subsidies from Economic Standpoint”** was published in the book “Sustainability in Energy Business and Finance” by Springer Nature. In the book chapter, CAN mentioned that the consumption of energy is inevitable for modern economic activities and is heavily subsidized by governments. However, in the study, it is mentioned that it had serious consequences in different ways such as income inequalities, market inefficiencies, profligacy etc.

CAN also mentioned that these adverse conditions arise through energy subsidies, national income, balance of payments and public finance channels and that developing countries are more heavily affected by the negative effects of energy subsidies for budgetary reasons and suffer from energy poverty due to the difficulties they experience in accessing energy. Therefore, the study emphasized that the design of energy policies should be calibrated by policy makers considering country-specific conditions and ongoing trends, in order to avoid the negative effects and inefficiencies caused by energy subsidies. Despite the numerous commitments of the international community to reduce energy subsidies for various reasons, the fact that no significant results have been achieved on this ground so far and that current price trends reveal opportunities for reform were among the issues addressed in the study.

Asst.Prof.Dr. Fatih YİĞİT and Res.Asst. İsmail CANÖZ from the Department of Management presented the results of their research titled **“The Impact of Energy Investments on Regional Development”**, in which they investigated the effects of energy policies on the economic growth of regions, at the International Congress of Economics, Politics, Humanities and Social Sciences held in Batman on March 24-25, 2022.

The research focused on the relationship between energy investments and economic growth, recognizing that Turkey is dependent on foreign sources for energy access and consumption, which is a major and ongoing economic problem for the country. The research revealed that especially recently, energy investments have been given great importance in Turkey, and that economic breakthroughs in this sector have intensified with the energy policies developed. In addition, based on the hypothesis that the increase in energy investments in Turkey, where the socio-economic development differences between regions have reached significant dimensions, will positively affect many parameters representing regional development and growth, the research revealed the existence of these positive effects through a number of econometric methodologies. The results of the research revealed that the reduction of Turkey’s dependence on foreign energy will enable the country to transform the expenses arising from high energy costs into domestic and value-added production investments.



The article titled **“Dynamic Relationship Between International Tourism, Economic Growth and Environmental Pollution in the OECD Countries: Evidence from Panel VAR Model”**, co-authored by Prof.Dr. Seyfettin ERDOĞAN, a faculty member of the Department of Economics of our university, was published in the Journal of Economic Research-Ekonomika Istraživanja. As a result of their empirical analysis, the authors found that tourism shocks not only increase economic growth but also cause more carbon emissions. They also found that the negative impact of tourism shocks on environmental pollution is greater than its positive impact on economic growth. Based on the empirical results, the authors emphasized that policy makers should take action and take measures to reduce the impact of international tourism on environmental degradation. They suggested the development and dissemination of clean energy technologies in tourism activities in order to reduce the negative impact of tourism on the environment.

The article titled **“Eco-friendly Technologies, International Tourism and Carbon Emissions: Evidence from the Most Visited Countries”**, of which Prof. Seyfettin ERDOĞAN, a faculty member of the Department of Economics, is one of the authors, was published in the 180th issue of the Journal of Technological Forecasting and Social Change. In their study, ERDOĞAN et al. emphasized that the tourism sector causes a significant environmental footprint on a global scale. Stating that transportation is the primary source of carbon emissions, especially from international tourism, ERDOĞAN et al., in the study, examined the regulatory effect of environmentally friendly innovations on the transportation sector for the relationship between international tourism and carbon emissions. The authors concluded that environmentally friendly industrial innovations in the transportation sector will eliminate the

harmful effect of international tourism on carbon emissions. ERDOĞAN et al. emphasized that the empirical results obtained in the study are important for policy makers because the countries included in the analysis are committed to reducing their carbon emissions according to the Paris Agreement and the Sustainable Development Goals. They recommended these countries to attach more importance to innovative processes, especially in transportation, and to increase the share of innovation expenditures in GDP.

The article titled **“Precious Metals as Safe-haven for Clean Energy Stock Investment: Evidence from Nonparametric Granger Causality in Distribution Test”**, of which Prof. Seyfettin ERDOĞAN, a member of the Department of Economics of our university, is the lead author, was published in the 79th issue of Resources Policy Journal. In their study, ERDOĞAN et al. stated that renewable energy investments have increased significantly in the last decade due to global climate change, sustainable development and increasing risks in energy security, but investments in clean energy technologies are far from meeting the net zero carbon emission target by 2050. Emphasizing the need for mobilization for clean energy investments in this context, ERDOĞAN et al. focused on the relationship between precious metal prices, which economic agents see as a safe haven against the risks in clean energy investments, and these markets. They concluded that clean energy stock prices are advantageous in affecting precious metal prices and that precious metals cannot be used to hedge the downside risk of clean energy stock investments. Emphasizing that these findings are important for investors to reduce their portfolio risks, ERDOĞAN et al. stated that in addition to public investments in the clean energy sector, institutional investments are also necessary to reduce carbon emissions.

