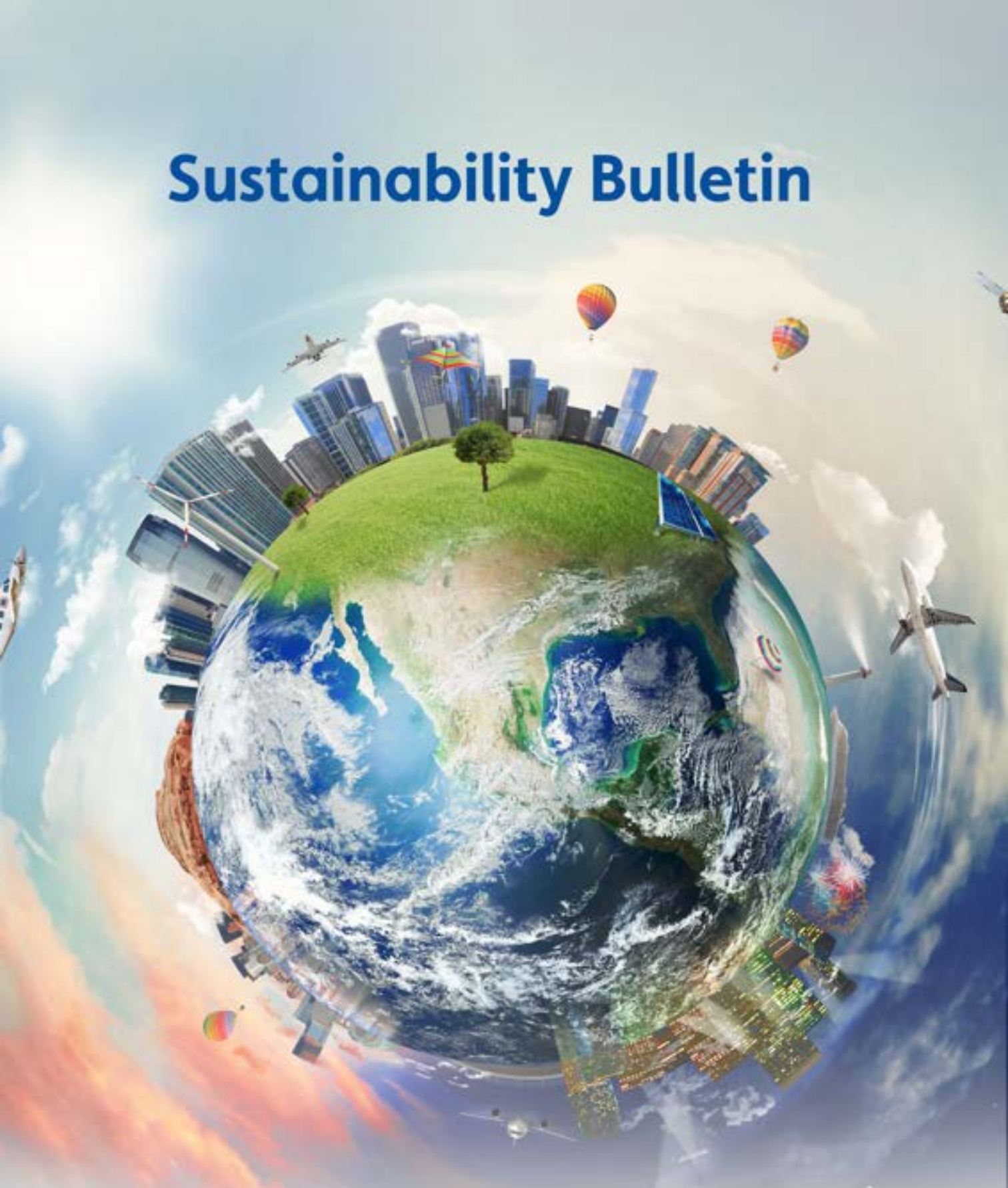
Sustainability Bulletin



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About The Bulletin

In our **23rd** Sustainability Bulletin, which we have published monthly in the past years and decided to publish quarterly as of **2023**, we share with you the developments and various news on sustainability and ESG in Turkey and the World in January, February and March. In our bulletin, we examine sustainability in more depth and include many Sustainable Development Goals (SDGs) such as sustainable cities and living spaces, gender equality, climate action, and responsible consumption and production.

Kahramanmaraş Earthquake

The earthquake that occurred in Kahramanmaraş on February 6 was felt strongly in the surrounding provinces and affected us all deeply. We feel the sadness and share the pain of tens of thousands of our citizens who lost their lives and were injured in the earthquake that was effective in 11 provinces. This natural disaster, which is on the agenda of the whole world as the disaster of the century, has become an indicator of our need for sustainable cities.

Effective city and regional planning are needed in order to survive against risky conditions such as **earthquakes, floods, fires, epidemics and droughts**. The concept of sustainability includes the use of recyclable materials that will prevent pollution and waste generation, as well as the construction of cities that will not be damaged by natural disasters.

Why Are Sustainable Cities Important?

Sustainable Cities aim to make settlements more inclusive, safe, resilient and sustainable. However, some cities are more affected by climate change and natural disasters due to their population density.
By making the planning of cities more efficient, the loss of life and property in the face of disasters can be prevented.

By following a sustainable path in urbanization, cities can be built in which the living standards of citizens rise, dynamic production is ensured, common welfare is produced, and social stability is ensured without harming the environment.

No More Disasters from The Wreck

It was determined that 232 thousand buildings were damaged or destroyed in the earthquakes in Kahramanmaraş. The debris of thousands of buildings destroyed in cities, pose a great threat to the environment and human health. Debris contains toxic chemicals such as asbestos, plastics and many other harmful materials/wastes. In case of improper storage of these materials and wrongly transporting them to agricultural areas/wetlands, serious environmental pollution will occur.

For this reason, debris removal processes must be conducted in accordance with the "**Regulation on the Landfill of Waste**" and the " **Regulation of the Control of Excavation Soil, and Construction and Demolition Waste**", otherwise there will be new disasters affecting living life such as soil, water, and air pollution.

A technical report was published by Marmara University Environmental Engineering Department faculty members Prof. Dr. Barış Çelik, Prof. Dr. A. Evren Tuğtaş and Dr. Hatice Yeşil, which mentions the danger of asbestos and includes suggestions and opinions on the safe management of earthquake debris waste.

Wastewater Systems Should Be Repaired Immediately

In earthquake-affected cities, drinking water and wastewater systems have been damaged. Problems regarding infrastructure systems continue, and people have difficulty accessing potable water in residential areas. Also, repairs to wastewater collection and treatment facilities have not been completed yet.

Thus, there is a risk that disposal of domestic wastewater into natural environments will cause pollution of soil, underground, and surface waters. An increase in infectious diseases as a result of pollution is a possible danger. It is recommended that earthquake victims use boiled water or disinfected water with chlorine until the repairs to the systems are completed.

Support from UNDP for Debris Removal

Support came from the **United Nations Development Program (UNDP)** for the removal and cleaning of the resulting debris. In order to prevent public health threats, garbage bins, calcium oxide (quicklime) and other disinfectants were sent to the region, and it was said that repairing of the damaged plumbing systems would begin soon.

UNDP estimates that between **116 million and 210 million tons of rubble** will emerge from this destruction, which has left 1.5 million people homeless. Developing an environmentalist perspective in rubble management, UNDP aims to recycle raw materials rather than sending the rubble to landfills. While the rubble is being processed, it is possible to provide livelihood opportunities to the local people by getting their help.

Solar Panel Support to Earthquake Zones

In order to meet the urgent need for electricity after the earthquake, 12 thousand solar panels were sent to the affected areas by the Turkish Solar Energy Industry Association. The electricity provided by the 400-500 watt panels will meet some of the energy needs of the containers and can be used for lighting, refrigerators, phone charging and communication.

Wind Power Plants in Cities Affected by Earthquakes

Electricity production continues uninterruptedly with 21 wind power plants in the cities affected by the earthquake. The power plants of **Hatay, Osmaniye-Gaziantep, Adana, Osmaniye-Kahramanmaraş, Adıyaman and Malatya**, which survived the earthquakes without damage, have a power of **962.42 megawatts** and have been commissioned at full capacity.

NEWS FROM TURKIYE

Imminent Risk: Water Scarcity

The increase in water consumption on a global scale, climate changes, pollution of resources and extreme weather events lead to the depletion of clean water resources. Since freshwater resources are not evenly distributed on the earth, most of the countries have limited access to water, **18%** of countries do not have access to any clean water.

According to the Falkenmark Water Scarcity Index, countries with annual per capita water amount in the range of **1,000-1,700** cubic meters are experiencing water stress. Although we are a country rich in water resources, problems such as pollution of the basins and excessive irrigation in agriculture cause water scarcity in Turkiye.

The fact that the annual amount of usable fresh water per capita in our country is 1323 m3, puts us among the countries experiencing water stress.

Withdrawal in Lake Uluabat

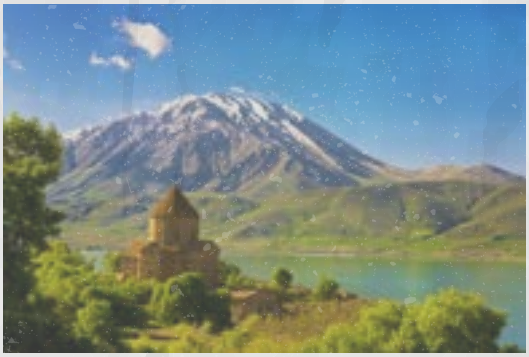
With the effect of drought, the water withdrawal in Uluabat Lake in Bursa has reached a level that can be observed with satellite imagery. The lake, which is protected by the Ramsar Convention, is very rich in terms of **plankton, bottom creatures, aquatic plant and animal populations**. Water withdrawal from the lake for agricultural irrigation and industrial purposes, industrialization in the surrounding region and other agricultural activities have led to a decrease in the water level in the lake. Concerns are growing that the withdrawal from the lake will lead to reduced **biodiversity** and loss of wetlands.

Pollution in the Marmara Sea

Pollution in the Marmara Sea has caused the fish to be malnourished. The Ministry of Agriculture and Forestry has decided to stop anchovy fishing in this region in order to protect the ecosystem. Due to the increase in water temperature the fish could not adapt to the new ecosystem and were replaced by other groups that preferred lower quality foods. The necessity of reducing anthropogenic activities and eliminating pollution in the region was emphasized.

Drought in the Van Lake Basin

Noting that the most severe drought has been seen in the Van Lake Basin, experts stated that climate change endangered biodiversity in the region. Lack of precipitation affects the flora of plants and changes the development and flowering times of plants.



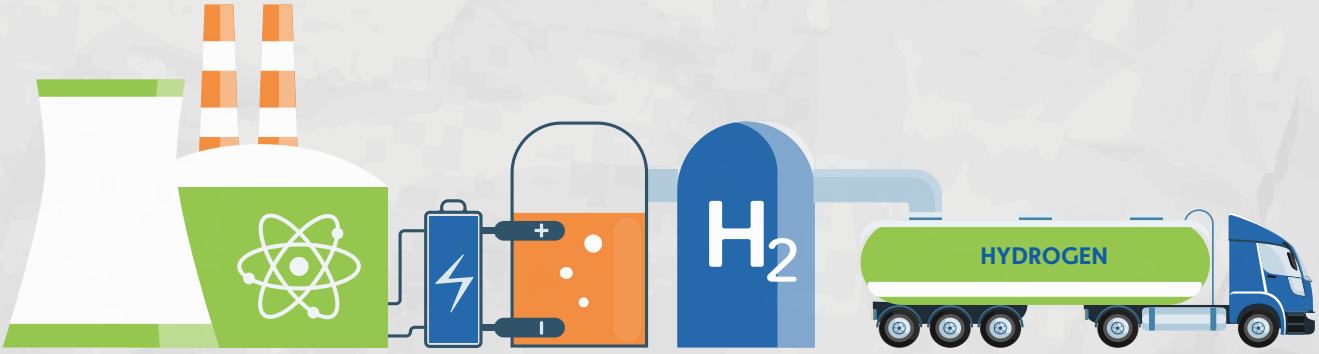
If the drought continues, it is predicted that 10% of plant species will disappear in the Van Lake Basin by 2050.

Low Water Level at Alibeyköy Dam

The water level at Alibeyköy Dam, which supplies water to Istanbul, was measured as the lowest in the last **10 years**. The water around the Güzelce Aqueduct, located in the water collection basin of the dam, has completely receded and the area is currently covered with grass. Only **5.98** million cubic meters of water remained in the dam with a capacity of **34.14 million**.

Turkiye's First Green Hydrogen Plant

Five major energy companies came together and signed the project for Turkiye's first green hydrogen plant. Turkiye currently meets **75%** of its energy needs from fossil fuels, and it is aimed to switch to green energy with this facility. The facility will be located at the **Bandırma Energy Base** of Enerjisa Üretim and will have the capacity to meet a large part of Europe's energy needs.



New Legal Regulations in Turkiye

Environmental Regulation for Electronic Products

The Ministry of Environment, Urbanization and Climate Change has made adjustments on the "**Regulation on the Management of Waste Electrical and Electronic Equipment**" and "**The Regulation on the Restriction of the Use of Certain Harmful Substances in Electrical and Electronic Equipment**".

Contribution to the protection of human health and the environment were aimed with the changes made to comply with the circular economy principles in all processes of electrical-electronic products. With the regulation on the use of materials that will support recycling and recovery, obligations were given to the producers of these products in order to easily separate, shred and reuse e-waste.

Manufacturers are required to organize a take-back campaign at least once a year and announce it to the public through communication channels. With the "**Regulation on the Restriction of the Use of Certain Harmful Substances in Electrical and Electronic Equipment**", new procedures and principles were determined, and articles for repairing, re-using or increasing the capacity of products offered to the market were included.

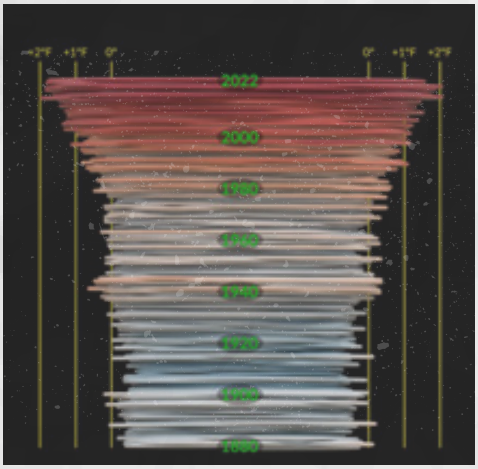
Near Zero Energy Buildings

As of January, the concept of Near Zero Energy Buildings which provides some of its energy needs from renewable energy sources unlike normal buildings was adopted. In accordance with the “Regulation on Energy Performance in Buildings” prepared according to the **2053** net zero emission buildings target; All buildings with a construction area of more than **5000 m2** in a parcel must have at least "B" energy class and at least **5%** of the energy used in the buildings must come from a renewable source. In **2025**, it is aimed that buildings of **2000 m2** and above will be included in the regulation and the amount of renewable energy will be increased to **10%**. With these changes, it is aimed to reduce Turkey's energy import bill by **10 billion** turkish liras.

News from the World

NASA Identifies CO2 Emission Sources

In a study involving Europe's largest coal-fired power plant, it was found that carbon dioxide emissions could be tracked with satellite imagery. Researchers measured the amount of carbon dioxide emitted at the **Bełchatów Power Plant in Poland between 2017-2022** with **NASA's Orbiting Carbon Observatory (OCO)** satellite. The results found space-based observations could show local emission changes.
Thanks to the more detailed measurement of **CO2** emissions, the efficiency of policies to reduce emissions can be understood. **OCO-2 and OCO-3** satellites are also planned to be used for different power plants.



2022 is the 5th Hottest Year Ever Recorded

NASA shares the latest data with the Earth System Observatory to support climate modeling, analysis and forecasting to help humanity to confront the changing climate of our planet. The last 9 years have been the warmest since records began in 1880. This means that in 2022 the Earth was about 1.11 °C warmer than the average at the end of the 19th century. The main reason for the increase in temperature is the extremely high greenhouse gas emissions. Communities around the world are experiencing effects that scientists linked to a warming atmosphere and ocean.

Climate change is intensifying precipitation and tropical storms, deepening the severity of droughts and increasing the impact of storm surges.

According to the analysis made by NASA, the average surface temperature of the Earth in 2022 is at the same level as in 2015, making it the 5th highest temperature ever recorded.

Rising Water Levels

Water levels are rising as ocean temperatures rise and glaciers melt. A new study published in the Earth's Future journal shows that after sea level rise, 2 times more land mass will be submerged than previously thought.

The rate at which we decarbonize the global economy is linked to the rate at which sea levels rise. Under a high emission scenario where global warming is above 4 °C, the world's oceans could rise by 1.3 meters by 2100. In the scenario of keeping the warming below 2 °C, an increase of 0.3-0.6 meters is likely.

It is estimated that there will be a warming of **2.7 °C by 2100** if the countries reach the targets stated in their environmental policies. In this case, modern methods such as embankments and pumping stations should be developed by taking cities such as **New Orleans** and **Amsterdam** as an example in order to adapt early to rising sea levels.

Reducing Packaging Waste

Within the scope of the Circular Economy package of the European Union, it was decided to apply new rules in order to reduce paper and plastic packaging waste. Previously, these rules restricted single-use plastic products. In the new regulation, it is aimed to make the packaging from recycled materials and to switch to reusable packaging. Waste produced per capita is expected to be reduced by **5%** by **2030** and by **15% by 2040**.

Solar Energy is Getting Widespread

According to the Global Market Outlook for Solar Power report, the economic recession and energy crises that emerged after **Covid-19** caused electricity prices to rise. Many countries turned to renewable energy in order to reduce the effects of the crisis, and the solar energy sector was the sector that made the most investment. The capacities of **20** countries using solar energy in electricity generation are expected to reach **2,000** gigawatts in the **2022-2026 period.**

New Discovery to Increase the Efficiency of Solar Harvesting

The structure of perovskite, which can absorb light much better than silicon, was thought to be unstable. However, thanks to recent research, it has been discovered that the imbalance state caused by the passage of ions through the material can be prevented by the use of a new channel that does not change the structural integrity of the material and does not reduce its performance.

It is thought that by using the miracle material called perovskite in solar panels, lighter, flexible and efficient panels can be developed compared to existing systems. Thanks to this discovery, perovskite material could be used in solar farms where solar harvesting takes place.

London Stadium in England to Produce Its Own Energy

The stadium in England will be covered with solar panels to reduce carbon emissions and provide its own energy. The work is planned to start at the end of the year, and by the end of 2024, it is aimed that the stadium will be able to produce its own energy.

British Safety Council (BSC) International Occupational Safety Award

As Teknosa, we are pleased to announce that we have won the International Safety Awards for Occupational Health and Safety by participating for the first time in the 65th evaluation organized by the British Safety Council, one of the world's most respected institutions in the field of Occupational Health and Safety (OHS).

We will continue our work in the field of OHS, which is among our priority issues, with the motivation provided by this important award and with our people-oriented approach!

Trends That Will Shape Sustainability in 2023

According to the article published by the Eco-Business website, the effects of the energy and food crisis caused by the pandemic and current wars will lead to the emergence and development of more sustainable trends in 2023. These trends are as follows:

1. Consumers will spend on more sustainable products

In the upcoming year, consumers are expected to make changes in their lifestyles, such as consuming less meat, buying products that are about to expire, or buying locally grown products because they are cheaper.

2. Orientation to local businesses

Due to the effects of global uncertainty, countries are expected to take action to conserve local resources and increase local businesses.

As the impact of global warming will be felt more and more, it will be of interest to more consumers whether global brands take their local commitments seriously. The concept of "localism", which will become a trend in 2023, means supporting the communities where the product is produced, rather than where the consumer is.

3. Asia to become main supplier of fossil fuels

The invasion of Ukraine by Russia, the world's largest exporter of fossil fuels, in 2021 has thrown global energy markets into turmoil. In the new year, Europe will turn to coal, oil and gas producing countries such as Indonesia, Vietnam and Malaysia for its energy needs. But the increase in demand for unsustainable energy will cause prices to rise in Asia. On the one hand, developed countries will have the opportunity to support renewable energies such as solar and wind.

4. Orientation to Asia for minerals used in clean energy

Russia is also one of the suppliers of high-quality nickel, a key component of lithium-ion batteries found in electric cars. The desire of European countries not to turn to strategic competitors such as China will result in an orientation to the markets of countries with insufficient regulatory environment such as the Philippines and Indonesia. As new mineral supplier countries are found, companies will have to implement sound environmental, social and governance (ESG) policies to avoid jeopardizing their corporate reputations.

5. Interest in high-tech agriculture and regenerative agriculture will increase

The use of technology will continue in the next year to increase food production and keep costs at the lowest level. For example, the Philippines-based International Rice Research Institute (IRRI) is preparing for food shortages by genetically modifying rice to increase yields. In China, the insemination process on farms has been automated. Regenerative agriculture, which refers to farming and grazing practices that reverse climate change by restoring degraded soil, is thought to be another trend in sustainable agriculture this year.

6. Social and environmentally conscious tourism

The change in consumer behavior will also affect the travel industry, and tourists will turn to options where they can have a meaningful impact on nature and society. A travel company is taking thousands of tourists on tree-planting tours to reforest the barren mountains of Zambales in the Philippines. With regenerative tourism, tourists have experiences where they can leave the places they visit in better condition than before.

Electronic Waste (E-Waste)

Electronic devices, which are an inseparable part of our lives with a wide range of uses, are constantly changing and consumed rapidly with technological developments. Rapid consumption causes many electronic devices to turn into e-waste before they reach the end of their useful life. The short life cycles of products and limited repair/renewal possibilities make e-waste the most difficult to manage and at the same time the fastest growing waste group in the world.

It is expected that approximately 75 million tons of e-waste will be generated annually in the world by 2030!

What is E-Waste?

Electronic waste includes electrical devices that are powered by a system or battery, have an electrical circuit and are not intended to be reused by the user. E-waste should be divided into logical and practical categories for international comparison and comparison of country's e-waste management performance. These categories are;

- Heating and Cooling Devices (refrigerators, freezers and air conditioners)
- Equipment Containing Monitors and Displays (televisions, monitors, laptops and tablets)
- Lighting Equipment (fluorescent lamps, LED lamps)
- Major Home Appliances (washers, dryers, dishwashers)
- Small Home Appliances (vacuum cleaners, microwaves, water heaters, scales, electric toys)
- Consists of Information and Communication Technologies (phones, printers, game consoles, calculators).

The amount of e-waste per capita in Turkey is 8 kilograms and the amount of e-waste generated is 847,000 tons per year.

Why is Responsible Production and Consumption Important?

The fact that the world population will reach 9.6 billion by 2050 indicates that more people will rise to the middle class in the next 20 years. This situation, which is good news for prosperity, will cause natural resources to be consumed faster and will cause irreversible damage to nature if we do not change our production-consumption habits. Even with small changes in our consumption habits, we can achieve important results for the society.

Hazardous Substances in Electronic Waste

Substances in e-waste that are harmful to human health and the environment can be released during recycling processes or while they are in landfills. Elements such as lead, mercury, cadmium in waste and fire-retardant substances that prevent devices from igniting, create health risks for living beings. Dielectric materials and coolants used in various electrical appliances lead to the emergence of dioxin chemical, which is toxic to living beings, in case of burning electronic wastes. Also, the most important source of lead in garbage is the cathode ray tubes used in televisions and monitors.

The recycling rate of e-waste is 33% in European Union countries, 10% in the world and 5% in Turkey.

Value of Electronic Waste

Materials found in electronic waste are important sources of secondary raw materials; **Precious metals such as iron, aluminum, copper, gold, silver, platinum** can be recovered. Recycling these discarded materials contributes to the country's economy and most importantly has a positive impact on the environment and human health.

In 2022, 5% of the waste generated in Turkey was recycled, and the remaining 95% caused economic and environmental loss.

E-waste has an important place in achieving the Sustainable Development Goals. In the Global e-waste Monitoring Report, it is mentioned that e-waste accounts for **0.3%** of global greenhouse gas emissions and that effective e-waste management can help decelarate global warming. The report mentions that recycling the valuable raw materials found in waste requires less energy than extracting raw materials from mines and therefore less greenhouse gas emissions will be produced. For example; **200 kg** of rock needs to be processed to obtain **1 kg of iron**, the same amount of iron can be obtained by processing **2 kg** of e-waste. The products obtained after recycling can be used as the main raw material in various sectors.

E-waste is also included in the zero waste practice carried out in our country. Within the scope of the Zero Waste Project, electronic devices should not be thrown away before they reach the end of their life, they should be repaired and reused when necessary, and finally, the e-waste should be collected separately at the source and taken to the collection areas determined by the authorized institutions.

In **2023**, there are 347 million metric tons of non-recycled e-waste in the world. Globally, the rate of collected and recycled e-waste is only 17.4%.

Gender Equality

March 8, International Women's Day, is an opportunity to celebrate a future created by innovation and technology in which women and girls play a leading role. The United Nations determined the theme as "**DigitALL: Innovation and Technology for Gender Equality**" for this year's March 8 International Women's Day, celebrating women and girls who support the development of technology and digital education, and drew attention to the digital gender gap. Involving women in technology will lead to creative outcomes that meet women's needs and pave the way for developments that support gender equality.

Women are already key stakeholders and pioneers in the sustainable transformation of organizations, communities and countries. Inclusion of women is the foundation of all development plans, including climate action. The economic empowerment of women, in conjunction with girls' education, family planning, reproductive and sexual health, and reduction of child marriage, facilitates the transition to low-carbon economies, helps improve resource use and helps reduce environmental damage and land fragmentation, as well as increase resilience. In countries where there is no women's labor, the economic loss is around **30%**, and where there is no gender equality, it is seen that there is no production, welfare and development. With the increase in the number of female employees, efficiency up to **35%** can be achieved in enterprises. Ensuring the economic development of Turkey also passes through women's power.

If gender equality is achieved, it is believed that there will be a contribution of 12 trillion dollars to the world economy in 2025.

When sustainability is mentioned, ecological contents such as climate change, recycling, renewable energy, protection of ecosystems and pollution come to mind first, but today, sustainability covers social and societal problems. Social criteria such as equality, health, education, housing and security are indispensable for sustainable development.

Why is Gender Equality Important?

Gender Equality, which is among the Sustainability Development Goals, basically aims to strengthen the position of women and girls and to eliminate the discrimination they face. One of these goals is to ensure the participation of women in the decision-making processes of political, economic and social life and to ensure that women are given equal opportunities to be leaders in decision-making at all levels. In terms of this goal, the ratio of women in managerial positions and the ratio of women's seats in the administration and parliaments are examined. Another goal is to develop the use of enabling technology, especially information and communication technologies, in order to ensure the continuity of women's development.

The "**Technology for Women, Solidarity for All**" Project by Sabancı Foundation and Teknosa is carried out in line with this development goal. As part of the project, unused smartphones donated to Teknosa are maintained and delivered to women who are victims of violence through **TKDF**.

Ways to Ensure Gender Equality and Sustainability

According to the United Nations Women's Unit, the ways to be followed in order to create a future where gender equality and sustainability are achieved jointly are as follows:

1. Supporting Small Businesses Run by Women

With programs that ensure the empowerment of women; 55% of food security improvements are achieved in developing countries. Increasing the production capacity of women farmers and supporting sustainable agricultural practices are also included in this title. The Food and Agriculture Organization believes that increasing the resources of female farmers will result in a 20-30% increase in farm yields. If this efficiency is achieved, it is estimated that the hunger problem in the world will decrease by 12-17%.

2. Supporting Female Leaders

Globally, it is seen that female managers achieve better environmental results. Countries with high female seats in national parliaments adopt stricter policies regarding climate change and global warming. Being more effective and efficient in resource management depends on including women in community climate programs.

3. Supporting Women's Organizations

The voices of women and girls are heard, their needs are met and policies are implemented through cooperation between women's organizations and the government. Non-governmental organizations advocating for women's rights provide immediate support to vulnerable groups by filling the gaps in government services. Supporting and empowering these communities is instrumental in building climate resilience.

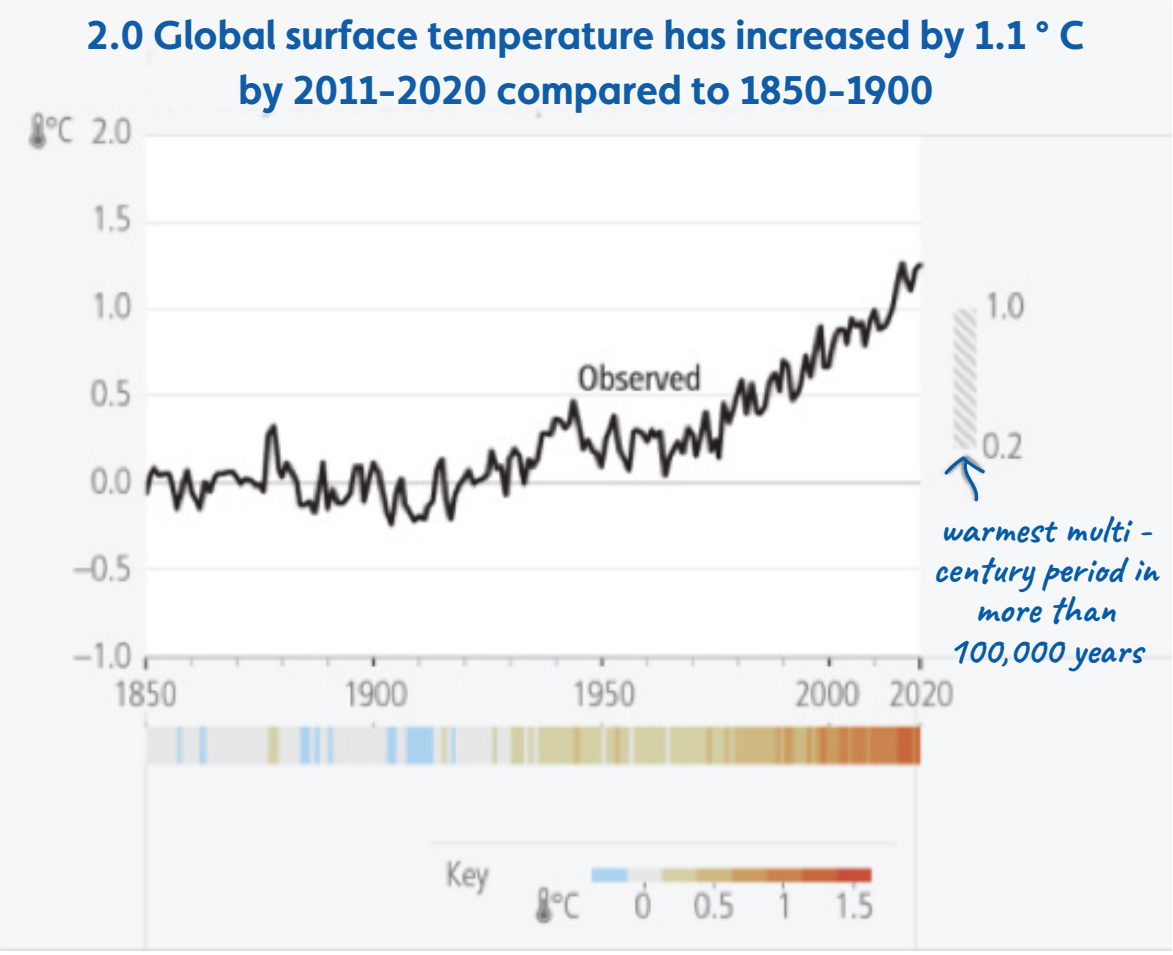
4. Protecting Women's Health

The voices of women and girls are heard, their needs are met and policies are implemented through cooperation between women's organizations and the government. Non-governmental organizations advocating for women's rights provide immediate support to vulnerable groups by filling the gaps in government services. Supporting and empowering these communities is instrumental in building climate resilience.

Intergovernmental Panel on Climate Change (IPCC) Synthesis Report

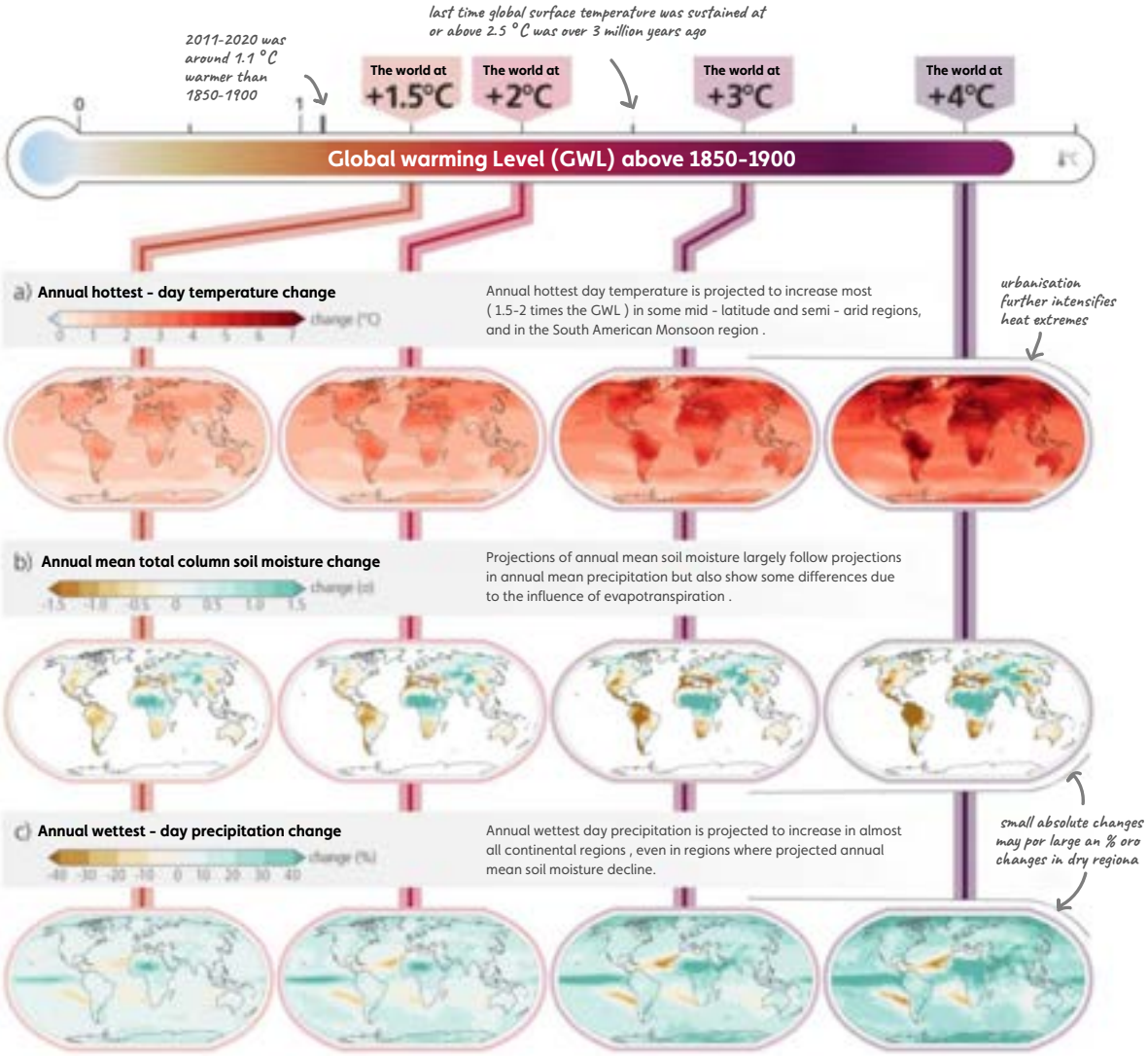
The Intergovernmental Panel on Climate Change, which was created in 1998 by the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) to guide the authorities in combating and adapting to climate change, held its 58th session and released the Sixth Assessment Report (AR6).

In the report, it was mentioned that compliance with the 1.5°C target set by the governments in the Paris Agreement is of critical importance. Unsustainable energy and anthropogenic emissions such as land use, lifestyles and consumption-production patterns have been the main source of global warming. Due to the use of fossil fuels, the global surface temperature rose above 1.1°C between 2011 and 2020, and the sea level rose 20 cm between 1901 and 2018.



Due to the use of fossil fuels, the global surface temperature rose above 1.1°C between 2011 and 2020, and the sea level rose 20 cm between 1901 and 2018.

According to the report, it is conclusively observed that human influence warms the atmosphere, ocean and land. Widespread and rapid changes occurred in the atmosphere, ocean, cryosphere, and biosphere. If temperatures rise further, the water cycle is expected to become unpredictable, with droughts, fires, floods, intense storms and changes in sea level expected to increase.

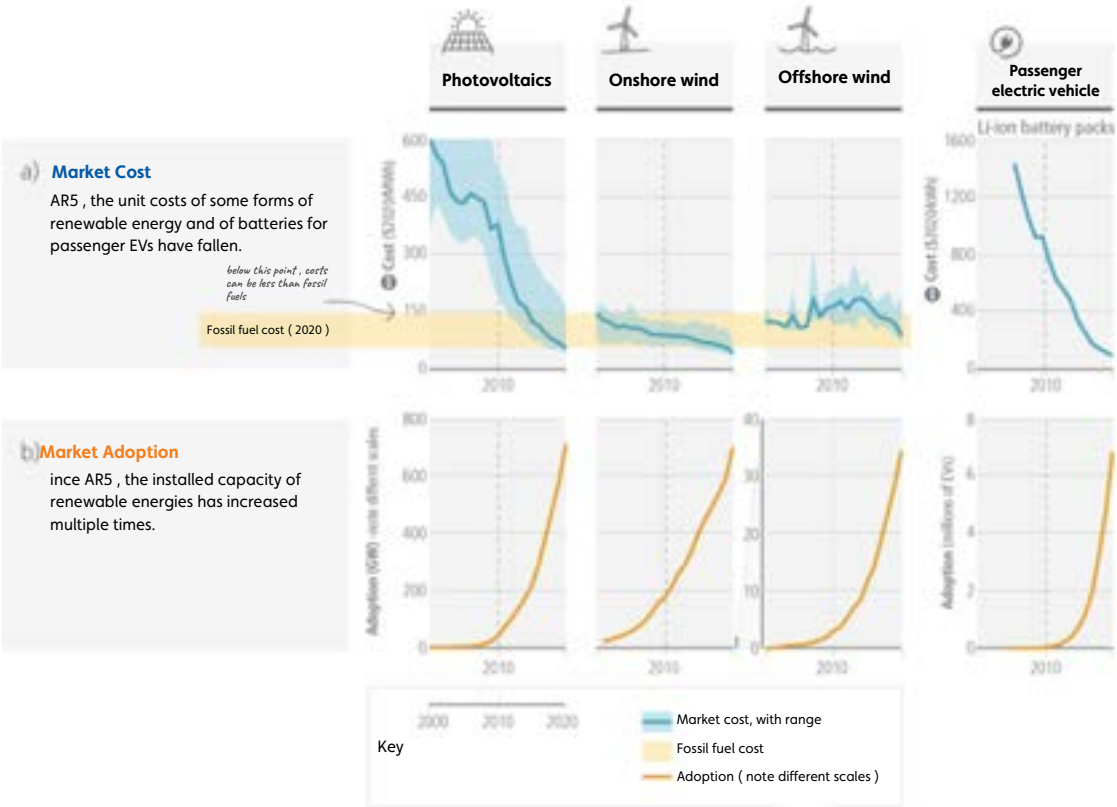


Arguing that a resilient and livable future is still possible, the report emphasized the importance of the steps to be taken in the next 10 years. Near-term (2040 or before) emission reduction targets were mentioned for the first time in the synthesis report. To reach the 1.5°C target, CO2 emissions need to be;

- **reduced by 48% in 2030,**
- **reduced by 65% in 2035,**
- **reduced by 80% in 2040,**
- **reduced by 99% in 2050.**

It was underlined that moving away from fossil fuels and turning to renewable energy sources leads to good actions. Countries began to adapt to green energy plans, which became viable and cost-effective. It is stated that the unit costs of solar energy, wind energy and lithium-ion batteries decreased significantly between 2010-2019.

Renewable electricity generation is increasingly price - competitive and some sectors are electrifying



The effects of climate change are felt more in some regions. An average of **3.3 to 3.6 billion people live in areas highly vulnerable to climate change**. This population is 15 times more likely to pass away from climatic events such as **floods, droughts** or storms than those in low vulnerability areas. Temperature increases also damage ecosystems and cause mass death of living beings in land and oceans.

It is possible to reduce future losses and damages with the implementation of mitigation and adaptation actions in the next **10 years**. Many reduction actions that can be carried out individually will be beneficial for health, such as active mobility (walking, cycling) and switching to sustainable diets.

With the reduction of methane emissions, near-term global warming can be limited and air quality can be improved to some extent. **Adaptation can yield benefits such as agricultural productivity, innovation, food security and biodiversity conservation**. Equity and inclusion enable adaptation actions and mitigation to be successful, helping to achieve climate-resilient development.

This synthesis is the last major report of the **Intergovernmental Panel on Climate Change**, scheduled to be published in the next 5 years. When the 7th evaluation report is published at the end of the decade, we hope that we are still not having the same conversations. We hope that the end of the 6th evaluation period will be the beginning of imagining a better future for people and demanding the future we deserve from our governments.

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