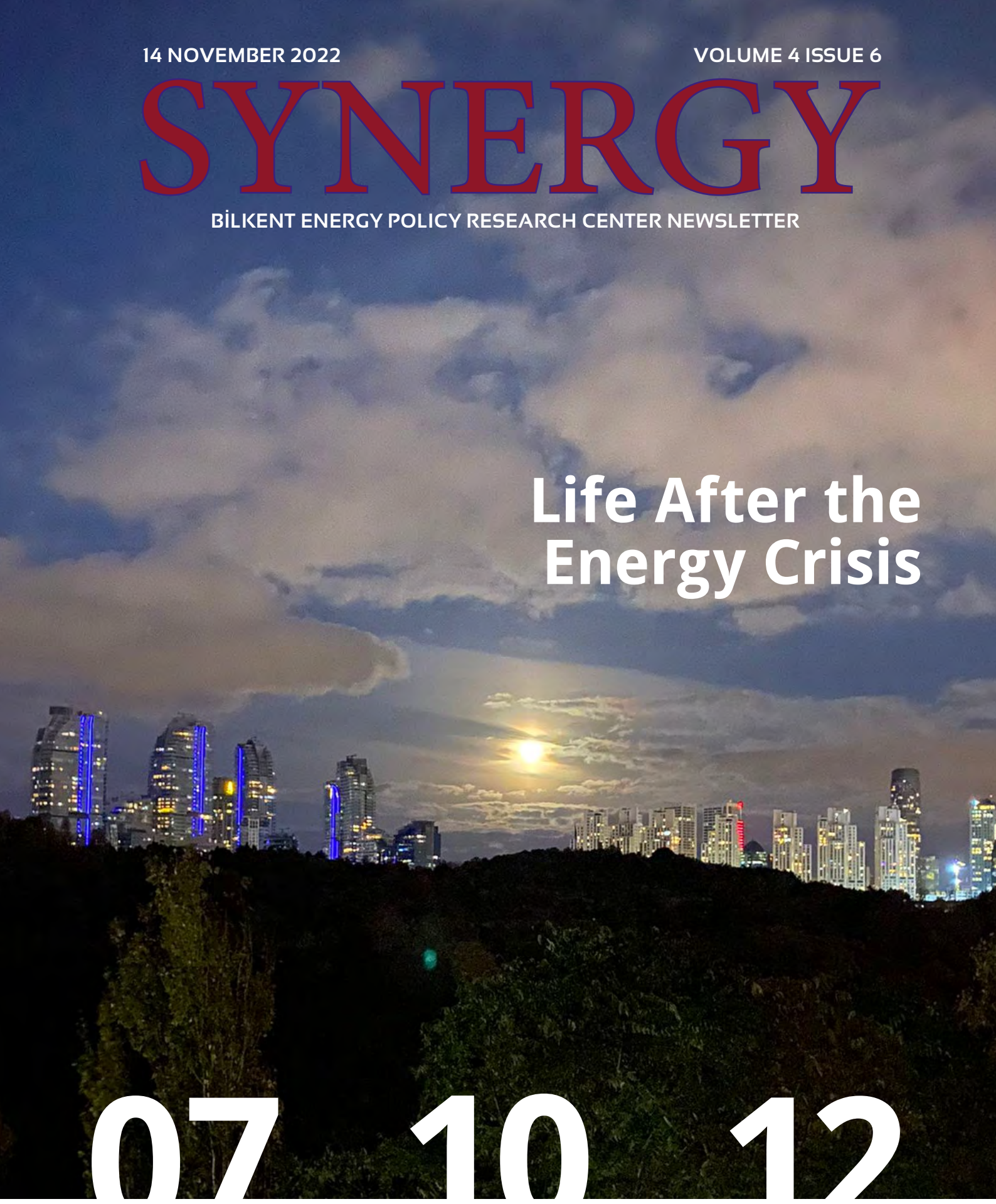
14 NOVEMBER 2022 VOLUME 4 ISSUE 6

# SYNERGY

BİLKENT ENERGY POLICY RESEARCH CENTER NEWSLETTER



## Life After the Energy Crisis

SYNERGY
14 NOVEMBER 2022 **VOLUME 4 ISSUE 6**
**#98**

# In This Issue...

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# ABOUT US

Energy Policy Research Center

Synergy is a weekly online newsletter published by volunteers on bilkenteprc.com. It welcomes feedback from readers. Please submit your letters to eeps@bilkent.edu.tr. The Editorial Board will review the letters and print them as space permits. The contents of this newsletter are the author's sole responsibility. They do not necessarily represent the views of the Bilkent Energy Policy Research Center or any of its Members.

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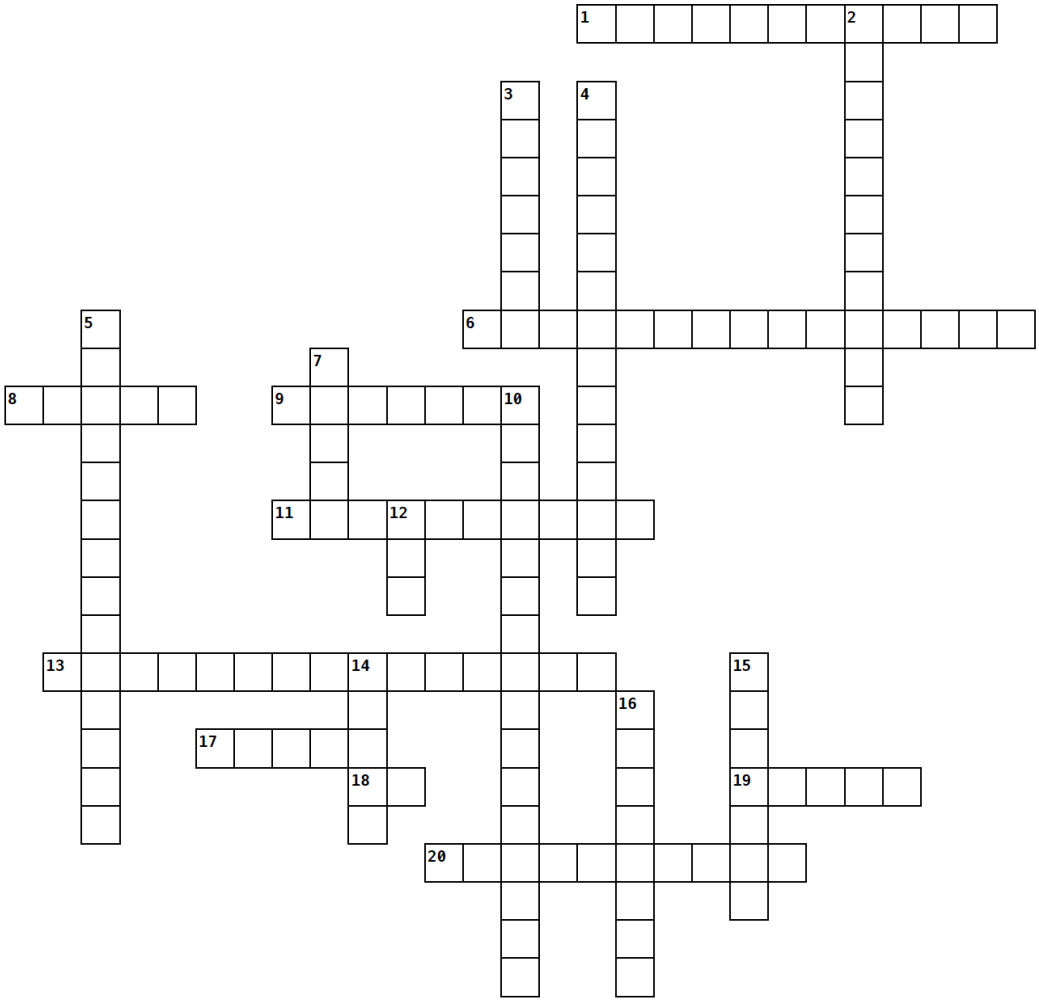
|---|---|---|---|
| BRENT OIL | 95.61 $/BL | GASOLINE | 22.84 ₺/LT |
| USD/TRY | 18.58 | DIESEL | 26.51 ₺/LT |
| EUR/TRY | 19.17 | FUEL OIL | 16.04 |

# Weekly Puzzle

## Prepared by Büşra Öztürk



**Across**

**1.** The biggest pipeline that was used to transport natural gas between Russia and Europe via Germany

**6.** A term anointed for a business if the net result of its activities is a decrease in the amount of carbon in the atmosphere

**8.** The state-owned crude oil and natural gas pipelines and trading company in Turkey

**9.** One of the non-conventional energy sources

**11.** A distinguished professor who does interdisciplinary research in the fields of energy, environmental and population change, technical innovation, etc. and an author of numerous books steadily grown in influence

**13.** The environmental disaster which was started with the burning of oil wells during the Gulf War and described as the biggest fire and the most terrible atmospheric pollution ever initiated by the hand of man

**17.** The top producer country of solar energy

**18.** The symbol of one of the rare earth elements that is used in high performance batteries

**19.** A major carbon sink

**20.** A unit that refers to the power an engine produces

**Down**

**2.** One of the most commonly used forms of energy in the world

**3.** A product of oil refinery that is used in jet engines

**4.** A gas leaking from the stove that could poison people

**5.** An environmental issue that is led by pollutants released from industrial plants

**7.** The abbreviation of European Climate Infrastructure and Environment Executive Agency which manages programmes contributing to decarbonisation and sustainable growth

**10.** A region where more than half of people lack access to electricity

**12.** The abbreviation for liquefied petroleum gas which is used as a fuel in a range of applications including in heating and cooking

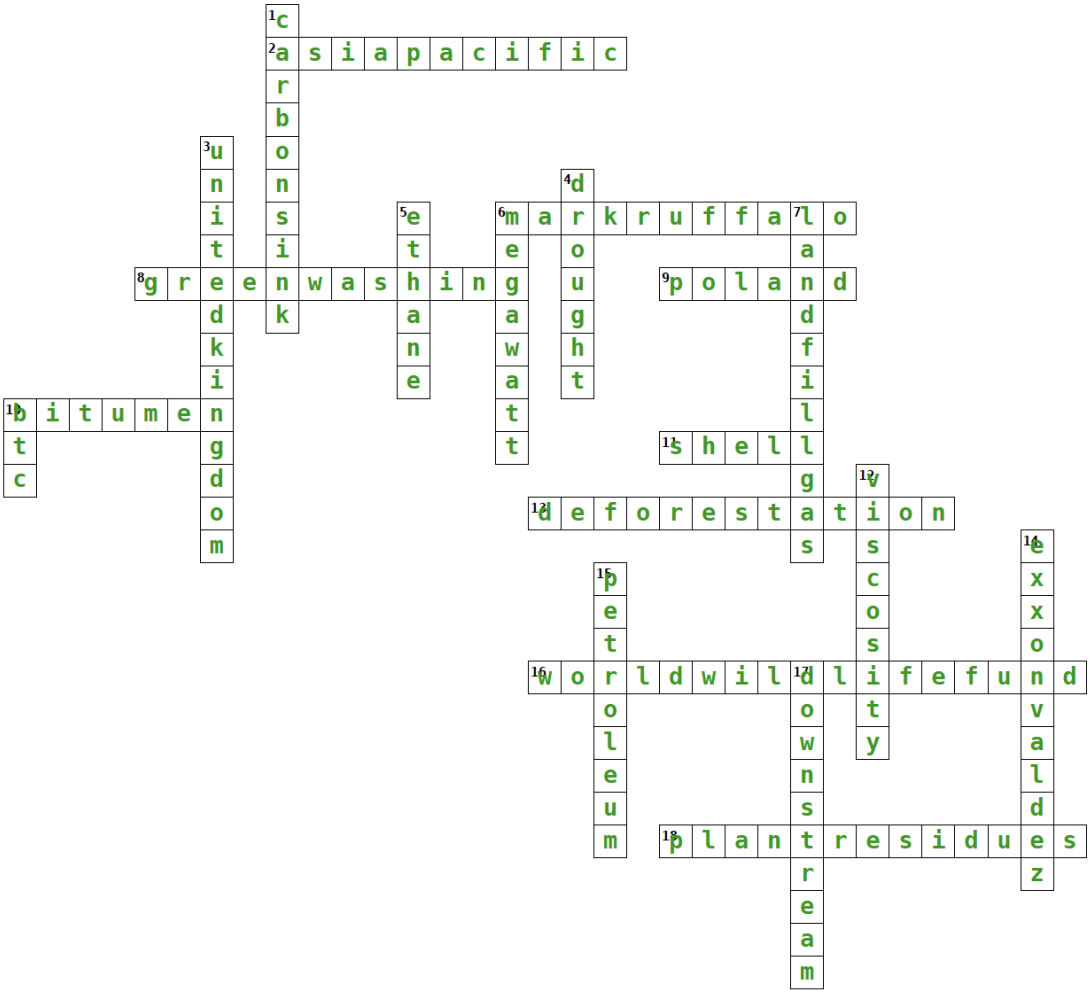
**14.** The arrival country where TAP transports natural gas to

**15.** One of the largest international oil giant companies

**16.** A device that carries the heat from the outside to the indoor environment by using electrical energy

# Previous Week's

## Correct Answers



**Across**

**2.** The largest region in the oil & gas upstream activities market in 2021

**6.** An adamant renewable energy advocate popular with his character as 'The Hulk' in Avengers Movie

**8.** A marketing strategy adopted by companies to appear more environmentally friendly or more ecological

**9.** The country which plans to import gas from Norway through Baltic Pipe

**10.** A black viscous substance obtained as a residue from petroleum distillation and used for road surfacing or roofing

**11.** One of the largest international oil giant companies

**13.** Converting a forested area into the non-forest one

**16.** An international non-governmental organization that aims to stop the damage to nature and repair the damage

**18.** One of the raw materials used in biogas production

**Down**

**1.** The general term for places or products that absorb more carbon from the atmosphere than it releases such as plants, the ocean and soil

**3.** The country which has the largest offshore wind farm in the world

**4.** An environmental event that climate change is likely exacerbating the frequency and intensity of the extreme

**5.** One of the gases contained in natural gas

**6.** A unit of power equal to one million watts

**7.** A gas obtained from solid waste landfills that releases energy during burning

**10.** An abbreviation of pipeline that carries oil from the Caspian Sea to the Mediterranean

**12.** An oil's resistance to flow or shear

**14.** One of the biggest environmental man-made disasters that occurred when Exxon's oil tanker spilt millions of gallons of crude oil into Alaska's shores

**15.** One of the conventional energy sources

**17.** The process of the refining, distribution and marketing of crude oil and natural gas

# Life After the Energy Crisis

Barış Sanlı

Every energy crisis has an ending. What is left behind are losses and wins. The high prices of 2007-2008 fostered the electric cars, batteries, and solar boom. It didn't end up with the efficiency we expected, but LED lighting has ended the reign of filaments. LED screens replace CRT tubes. More technological developments have arrived. But as Daniel Yergin says, these were the technologies available in the last 50 years. We are seeing technologies taking off now. Heat pumps or hydrogen or both? Floating wind turbines, small modular reactors, maybe fusion, and practically that is it. Electric cars have already taken off. Electric trucks may need some way to go.

There is also a philosophical change during these crises. Like the market structures, new intelligent systems... After every major US power blackout, there is a new trend of systems to avoid blackouts. On the commodities side, the 2007-2008 energy crisis has increased scrutiny of the financial markets' role in commodities. The famous "decoupling of gas prices from electricity prices in this crisis." Also, just like in the Nixon years, price caps. The problem with these proposals is that they serve as a façade to save the desperateness of policymakers. There is a tool; how it will work is unknown, but it will save the future. Or the claim is such.

So what will the energy world look like after this winter? First and foremost, technological innovation will speed up. AI, 3D printing, and automation powered various technologies, and their manufacturing will improve faster. The permitting processes will definitely drop and will morph into more e-permitting systems. The satellite photos and integration of big data may ease a lot.

Environmental movements are always wounded in high-price environments. So, do not think this is the end of environmental or climate change policies. Climate emergency will probably be replaced with more rational and sangfroid terms. Environmental policy will lose its mandate over other policies, but it will survive. Air quality, a clean environment, and water are necessary rights, and they will have a longer life.

Markets, on the other hand, may evolve for better or worse. One example is the California power market. The basic problem was data invisibility, which created big problems. In every energy crisis, the data returns with a vengeance. The current philosophy is about price controls, not market needs. It is a trial for consumer-centric design. For a true consumer-centric design, the consumer side's technology must change, including meters, bills, appliances, and interaction. Ever-optimizing markets have to penetrate the consumer side. Electric cars are already part of the discussion of the interactive consumer model. There is a need for more.

# Greenwashing Strategies in the Textile Industry

Nur Durmaz

Greenwashing is a term used by 20th-century environmentalist Jay Westerveld to criticize hotels. Even though greenwashing is a foreign term, it is an expression of mistakes made by companies and manufacturers and can be encountered frequently. This term is used in the name of institutions, companies, or organizations that want to influence people and create a social image, despite the positive effects they have made under the name of the environment; in fact, this is not the case. In other words, even if a company claims to be doing something for the environment, on the other hand, it is called "Greenwashing" when it harms the environment.

Even though greenwashing, is a method used by small companies to grow, it is seen that even large companies that are expected not to harm the environment and brands whose products are sold in the name of "environmental" are doing greenwashing today. The biggest examples of this are big brands like H&M and Zara. Fast Fashion triggers Greenwashing. Fast Fashion, which is caused by the hunger for consumption as the trends change rapidly and people enter the fashion race with each other with fast communication, is called the fact that people make the products that they normally wear and consume for 4-5 years, not two months, with cheaper materials and sell them at more affordable prices. The product used with Fast Fashion deteriorates and rots more quickly. Therefore, people want to buy the same or similar products. An individual who wants to buy a better quality product and use it longer must buy a product that is much more expensive than its normal price. Considering the Turkish economy, although it is normal for a minimum wage individual not to buy or buy a very expensive product, they should not be expected to pay 1000 TL for a pair of trousers. Of course, these frequently bought clothes come from stores like H&M and Zara.

H&M has been producing products with natural cotton products or recycled materials for about 2-3 years. With the institution called "Better Cotton Initiative," cotton is kept away from harmful chemicals, and this cotton is produced in accordance with workers' rights. But H&M is one of the leading brands that make Fast Fashion while advertising it. 2-3 years ago, when people were shopping, they preferred H&M because it had cheap and high-quality goods, but now they are unfortunately faced with Fast Fashion. In addition to the goods produced by environmental and human exploitation, expensive products are also sold under the name of recycling, and premiums are made with the sensitivity of the consumers.

Greenwashing can be done in 7 different ways.

1. It is the manufacture of demonstrable environmental approaches that are easily accessible to people or the so-called environmental products that are not certified by a third party.

2. The presence of the words "100% natural" or "all-natural, no harmful product used" on products can be noticed by the consumer very simply that a harmful substance is used.

3. It is the advertisement of the product by using pictures and slogans, giving the impression of third-party approval.

4. Regardless of other important issues, it is claimed that the raw material of the product produced is environmentally friendly.

5. While a claim may be true, it is trivial for individuals seeking products that are safer for the environment.

6. Even if it is a true claim for the products, it is the removal of the consumer from a larger environmental formation.

7. Claims that are considered environmentalist are completely false.

When looking at the types of greenwashing listed above, it is seen that it is necessary to question whether a product is really environmentally friendly or not. Labels, pictures, and slogans attract people. Every product sold under the name of the green market may not be produced in an environmentally friendly way and may mislead these individuals. According to a decision from the Norwegian consumer arbitration committee in 2019, it has been seen that the information on H&M whether the products sold under the name "Conscious" are sustainable or not is not sufficient.

Consumers can more easily be protected from greenwashing when they are aware of this. In addition to having awareness, they must know more about the brands that produce the clothes they buy. Suppose it is really desired to buy a sustainable product. In that case, questions can be asked to the manufacturer about this issue, or it can be understood whether it is sustainable from the materials written on the label. The label says, "Made with completely organic materials." It is necessary not to be deceived by articles such as these and to be able to compare them with truly sustainable products. Simply put, it can be sustainable by minimizing the number of clothes to be bought. Of course, it is very difficult to make these recommendations in a fast fashion world. Therefore, countries' green laundering control systems are of great importance at this point. One of the most successful ways of dealing with green laundering is that countries and international organizations create policies and support countries for green laundering. The work of the European Commission began to increase in 2020 on this issue. As seen in the European Parliament, the number of people who care about a greener world has increased considerably. In this context, policies that can overcome the problems brought by consumer hunger have been led together by the majority of people. As part of the New Consumer Agenda strategies, in November 2020, the European Commission announced that it is working on the green laundering problem. These studies will not remain only among policymakers. The role of the consumer is very important. They need to be aware of their safe access to sustainable products and their crucial role in sustainability. Of course, in the end, the preference for environmentally friendly and sustainable consumption should be seen as a lifestyle and a norm.

# How Drought Affects the Future of Countries

Zeynep Eğin

As a result of global warming and increasing emissions, the earth is beginning to witness more frequent extreme occurrences and critical climate concerns such as heat waves, torrential rain, and searing droughts. Due to the extreme heat, drought has contributed to an upsurge in hunger in recent years. In other words, rising temperatures cause more evaporation, which reduces surface water, and dries up soils, which results in a decrease in the yield of agricultural activities and higher rates of hunger.

While these crucial issues affect our lives, it is concerning that they would have even more destructive impacts on populations that are already at peril. Therefore mainly, developing countries require international assistance to finance adaptation. A recent report by the United Nations Intergovernmental Panel on Climate Change outlined the alarming repercussions of failing to slow global warming. Adaptation should address climate change and extreme weather hazards, such as protecting crops, mitigating the impact of rising seas, and strengthening infrastructure. These financial adaptations are necessary for all countries and will provide a safety net for developing countries that are particularly vulnerable.

According to the World Food Program, climate change is the second-leading cause of hunger after armed conflict, and the worsening climate change paved the way for stressful life conditions and food insecurity for millions around the world. Currently, 80% of people who experience hunger reside in regions that frequently experience natural disasters and severe weather, which creates a suitable environment for hunger to spread. Moreover, since droughts prevail longer and occur more frequently compared to previous years, they will have more disastrous effects.

"This is the worst drought that these countries have faced in 40 years," said Lia Lindsey, a senior humanitarian policy advisor at Oxfam America. "As we see greenhouse emissions increasing, we are seeing the severity of extreme weather events, like drought in this area, increase not only in frequency but also in severity." The International Food Policy Research Institute's new report on climate change and food systems reinforce this statement; according to the report, climate change might reduce food production by 16% and increase the number of people at risk of hunger by 23% by 2030.

For a populous, developing nation like India, the drought only exacerbates the rising tide of hunger. In India, where agriculture contributes significantly to the country's economy, an increase in hunger is an unavoidable result of decreased productivity due to drought. This situation not

only impacts the country's economy but also generates more significant issues, such as starvation.

In India, 189.2 million people are malnourished, which equals 14% of people in India, according to the Food and Agriculture Organization of the United Nations (FAO) estimates in "The State of Food Security and Nutrition in the World, 2020 report." Moreover, the number of Indians at risk of hunger in 2030 is estimated to be 73.9 million, with the effects of climate change increasing the figure to 90.6 million. Under identical conditions, the aggregate food production index would fall from 1.6 to 1.5.

Iraq is a second country that may be used as an example after India, which is currently experiencing the harmful consequences of drought.
On October 17, FAO and the World Food Program (WFP) in Iraq published a joint statement on the future of Iraq's agriculture and food security for World Food Day. The drought in Iraq prompted the two organizations to call for immediate action to address the underlying causes of the recent food and water crisis.

"Iraq has been experiencing increased drought for the past two years, brought about by the rising temperatures, reduced rainfall which is the lowest in 40 years in addition to reduced water flows in Tigris and the Euphrates rivers," the statement said. "This led to degradation of arable land, increased water, and soil salinity, which all contribute to serious loss of livelihoods and an increased pressure on the national state budget, which imports cereals to ensure enough food is available to the population."

The fact that agriculture is a significant part of Iraq's economy worsens the problem. Almost 20% of Iraq's citizens are employed in the agriculture sector, which accounts for 5% of the country's overall GDP and is the second-largest contributor to GDP after the oil industry. Therefore, the growth of agriculture is essential for enabling Iraq to develop.

With the threat of droughts resulting from climate change, the effort to eradicate poverty has become more challenging. Climate change, hunger, and malnutrition must all be addressed to diminish their effects not only on human lives but also on the acquirement of resources. Immediate action is crucial, and measures should be taken before it is too late, especially for nations already suffering from the consequences of drought.

# Zaporizhzhia Nuclear Power Plant from Past to Present

Yaren Öztürk

Since Russia invaded Ukraine, the Zaporizhzhia nuclear power plant has been controversial and is still on the world's agenda. From its inception to today, the Zaporizhzhia nuclear power plant has been the largest nuclear power plant in Europe and the ninth largest in the world. Located on the eastern bank of the Dnieper River, about 550 km southeast of Kyiv, the plant was built between 1984 and 1995. It has been modernized and renovated over the last two decades with the support of European Union funds. The final phase of the renovation program was scheduled to be completed this year but could not be completed due to the Russian occupation.

The Zaporizhzhia nuclear power plant has six nuclear reactors, and when they are operational, it can generate 5.7 GW of energy, enough to power around 4 million Ukrainians. The plant supplies more than 20% of Ukraine's electricity needs. The nuclear power plant has six Soviet-designed VVER-1000 V-320 water-cooled, water-moderated reactors containing Uranium 235 with a half-life of more than 700 million years. According to the Nuclear Energy Agency, as of July 22, only two of the reactors were operating, and these two reactors are crucial for Ukraine's power grid. Rumors heighten security concerns that Russian troops have taken control of the site since the invasion began, stationing military vehicles inside the turbine halls and preparing a risky plan to disconnect it from Ukraine's grid. Ukrainian workers operate the power plant in the region, which was captured by the Russian army in the early days of the war. The working conditions and the working environment to which Ukrainian personnel is exposed are not safe. It is known that about 9,000 of the 11,000 personnel working at the plant since the occupation of the region have stayed to ensure the safe operation of the reactors, risking detentions, attacks, and many other dangers imposed by the Russians. Petro Kotin, the head of Energoatom, noted that one worker at the plant had been beaten to death, another was severely assaulted and hospitalized for three months, and around 200 workers had been detained. He also said that although the plant was a Soviet design, Russian engineers were unfamiliar with updates to the system, making it unlikely that they would be able to operate it.

The frequent bombing of the Zaporizhzhia nuclear power plant in recent days and the fact that it is in the midst of war brings to mind a series of disasters and, of course, the Chernobyl accident of 1986. While Russia and Ukraine blame each other for the bombings, on August 25, fires at a coal-fired power plant near the last power line connecting the plant to the grid caused the grid to be disconnected twice. It was the first time the plant, which has been in operation for nearly 40 years, was disconnected from the national grid. Zelenski said Russian shelling had disconnected the 750 kV power line of the reactor complex, Europe's largest facility. He said backup diesel generators provided a vital power supply for cooling and safety systems at the plant and thanked the Ukrainian technicians operating the plant. The US has called for the plant to be shut down, while UN Secretary-General Antonio Guterres has called for the area surrounding the reactor complex to be demilitarized. Europe narrowly avoided a nuclear disaster. A nuclear accident could spread radiation across the continent. Experts warn of the risk of damage to the plant's spent nuclear fuel pools or reactors. The reactors' most significant threat comes from a water supply drop. Pressurized water is used to remove heat from the reactor and slow down neutrons, allowing the chain reaction of uranium 235 to continue. If the water is cut off and auxiliary systems such as diesel generators cannot keep the reactor cool due to a possible attack, the nuclear reaction will slow down, and the reactor will heat up rapidly. At such high temperatures, hydrogen could be released from the zirconium cladding, and the reactor could begin melting. But experts say the building housing the reactors are designed to contain radiation and withstand significant impacts, so the risk of a major leak is still limited. Paul Bracken, a Yale School of Management professor, said a radiation leak could potentially spread radiation over a large area, as happened in the 1986 accident at the Chernobyl reactor. He noted that failure at the plant could kill hundreds or thousands of people and cause environmental damage over a much wider area, stretching as far as Europe.

Moreover, the head of Energoatom noted that Russian engineers were drawing up a plan to permanently disconnect the plant from the national grid and connect it to the Russian power grid instead. A similar grid outage occurred in early

September, prompting fears in Ukraine that Russia could deliberately cut the lines. In early September, a team of experts led by the head of the International Atomic Energy Agency (IAEA) traveled to the plant for a safety audit to clarify claims about the plant's condition, operation, and damage. Their report states that damage has already occurred in parts of the plant. That continued bombardment could lead to worse consequences, including releasing radioactive materials into the environment. Exposure to very high radiation levels can cause skin burns, nausea, vomiting, and sometimes death in the short term, while in the long term, it can cause cancer and cardiovascular disease, it said. The report also called for interim measures to prevent a nuclear accident caused by physical damage caused by military vehicles, including the creation of a safety zone around the plant. The report also emphasized the need to improve working conditions for Ukrainian workers, warning that the current situation is not sustainable and could increase the likelihood of mistakes by personnel with an impact on nuclear safety.

By the end of September, Putin announced the formal annexation of four Ukrainian regions, including Zaporizhia, and publicized them as four new regions of the Russian Federation. While Putin was making these announcements, Energoatom announced that Murashov, the head of the Zaporizhia nuclear power plant, had been arrested by Russian forces while traveling from the nuclear plant to a nearby town. Murashov was released within days after the International Atomic Energy Agency said that his detention jeopardized the safe operation of the plant. Another event in the region, where tensions have been increasing, was caused by the fact that the power plant is located in one of the regions that Putin has declared annexed. Earlier this month, Putin ordered the complete takeover of the plant and declared that it now belongs to Russia. In response, Ukraine and the International Atomic Energy Agency said the plant belongs to Ukraine. This was followed by four days of Russian bombardment of the country's energy infrastructure, which resulted in the plant losing all external power and running on emergency diesel generators. Ukrainian Energy Minister Herman Halushchenko reported in an interview that Ukraine has been under heavy Russian missile attack since October 10 and that 30% of the country's energy infrastructure has been damaged. Following repair work, including the connection of the power plant to the Ukrainian grid, it is known that the power grid has stabilized for the time being.

Last month, the IAEA called for establishing a nuclear safety and security zone around the facility, but no such area exists for now. The escalation of tensions following Russia's annexation announcements is a testament to the limited powers of international organizations and nuclear watchdogs. It is not possible to take over the plant from Ukrainian personnel, which means that observers can only carry out limited inspections. The ongoing conflict is turning the Zaporizhzhia nuclear power plant into a ticking time bomb. Ukraine has demanded the evacuation of the Russian-occupied territory. Still, the world has yet to find a sustainable solution to this situation, which is the first time the world has witnessed a military conflict between the facilities of a large and established nuclear energy program.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