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A Review on Sustainability Policies of Businesses: Recycling and Waste Reduction

İşletmelerin Sürdürülebilirlik Politikaları Üzerine Bir İnceleme: Geri Dönüşüm ve Atık Azaltımı

Seda Yıldırım^{a,*} & Tuğba Kantarcı^b

^a Prof.Dr., Tekirdağ Namık Kemal Üniversitesi, İktisadi ve İdari Bilimler Fakültesi, İşletme Bölümü, 59030, Tekirdağ /Türkiye
ORCID: 0000-0003-4367-6652

^b Dr., Tekirdağ Namık Kemal Üniversitesi, İktisadi ve İdari Bilimler Fakültesi, İktisat Bölümü, 59030, Tekirdağ /Türkiye
ORCID: 0000-0002-2257-430X

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ÖZ

2030 Sürdürülebilir Kalkınma Hedefleri, kişi ve kurumlara bazı sorumluluklar yüklemekte ve bu sorumlulukların 2030 yılına kadar gerçekleşmesi beklenmektedir. Birleşmiş Milletler tarafından 2015 yılında kabul edilen 17 temel SKA ile küresel sorunların çözümüne yönelik hedefler ve yol haritaları ortaya çıkmaktadır. Sürdürülebilir tüketim ve üretimi içeren Hedef 12'de işletmelerin izleyebileceği bazı sürdürülebilir politikalar bulunmaktadır. Uygulamaya bakıldığında "geri dönüşüm ve atık azaltma" en fazla uygulama alanı bulan sürdürülebilir politika olarak görülmektedir. Bu bağlamda, çalışmanın amacı, işletmelerin 2 temel sürdürülebilirlik politikası olan "geri dönüşüm ve atık azaltma" yı nasıl uyguladıklarını ve bu politikaların sürdürülebilirliğe katkısını keşfetmektir. Çalışma nitel bir araştırmadır ve ikincil kaynaklardan elde edilerek seçilmiş bazı vakaların incelenmesi sonucunda elde edilen bazı nitel bulgular sunmaktadır. Çalışma sonucunda geri dönüşüm politikaları ve atık azaltma politikalarının piyasada popüler uygulamalar olduğu görülmüştür. Bu politikaların uygulanması, bir işletmenin itibarına katkıda bulunmakta ve pazarda rekabet avantajı sağlamaktadır. Ayrıca işletmelerin yapacağı her girişim, uzun vadede 2030 Sürdürülebilir Kalkınma Hedeflerine ulaşılmasına katkı sağlayacaktır.

ABSTRACT

The 2030 Sustainable Development Goals give some responsibilities to individuals and institutions and these responsibilities are expected to be realized by 2030. With the 17 basic SDGs adopted by the United Nations in 2015, targets and roadmaps for the solution of global problems have emerged. Goal 12, which includes sustainable consumption and production, there are some sustainable policies that businesses can follow. Considering the practice, "recycling and waste reduction" is seen as the sustainable policies that find the most application area. In this context, this study aims to examine how businesses implement 2 basic sustainability policies, "recycling and waste reduction", and to explore the contribution of these policies to sustainability. The study is qualitative research and gives qualitative findings as a result of examining some selected cases to be obtained from secondary sources. As a result of the study, it is seen that recycling policies and waste reduction policies are popular implications in the marketplace. Employing these policies contributes to a business reputation and gains a competitive advantage in the market. In addition, each attempt by businesses will contribute to achieving the 2030 Sustainable Development Goals in the long term.

1. Introduction

Sustainability is a global issue that worries both developed and developing countries for the future. With the 2030 Sustainable Development Goals adopted in 2015, the United Nations has determined 17 basic goals (United Nations, 2015) that countries, individuals, and institutions should achieve in a short time (Yıldırım, 2021; Yıldırım, 2020).

Although the criteria for achieving the goals expected to be achieved by 2030 are measured every year, in the face of unexpected situations such as the Covid-19 crisis (United Nations, 2022; Bostancı and Yıldırım, 2021; OECD, 2022) and the Ukraine-Russia war (OECD, 2022; Bin-Nashwan et al., 2022;), countries have had to pursue sustainability in more difficult conditions. It is a fact that industrial

* Sorumlu yazar/Corresponding author.
e-posta: sedayil@gmail.com

development supports economic growth, employment, and the degree of development but conventional economic models and traditional growth theories (Rodrik, 2006). However, a circular economy and green economy will save the next generations' living rights and standards in the long term (Munasinghe, 2002). Green economy and circular economy give chance for businesses and industries to reduce environmental pollution and use natural resources efficiently in the long term when supporting economic growth (Yıldırım and Yıldırım, 2020). At this point, it can be said that sustainability policies such as waste reduction and recycling are both important steps in adaptation to a green or circular economy. The significant increase in the amount of waste accumulated in the world has made it necessary for individuals and institutions to follow sustainable policies to solve the waste problem. According to The World Bank, 2.01 billion tons of waste accumulates annually in the world and the highest amount of waste is seen in high-income countries. Considering the figure that the world population will reach in 2050, it is important to solve the waste problem permanently. The positive relationship between waste generation and income shows that developed countries should take more responsibility in solving the waste problem (The World Bank, n.d.). In Table 1, waste quantities of OECD countries can be seen:

Table 1: Waste from OECD Countries

Country	2012	2014	2016	2018
Australia	..	..	..	..
Austria	48.045	55.868	61.225	65.666
Belgium	53.839	57.965	63.152	67.613
Chile	..	..	..	..
Colombia	..	..	..	..
Costa Rica	..	..	..	..
Czech Republic	23.171	23.395	25.381	27.913
Denmark	16.714	20.809	20.982	21.446
Estonia	21.992	21.804	24.278	23.186
Finland	91.824	95.970	122.869	128.195
France	344.732	324.463	322.685	342.388
Germany	368.022	387.504	400.072	405.524
Greece	72.328	69.759	72.332	45.593
Hungary	16.310	16.651	15.938	18.370
Iceland	529	815	1.067	1.294
Ireland	12.713	15.167	15.252	13.987
Israel	..	..	..	..
Italy	154.427	157.870	163.828	172.503
Japan	..	..	..	..
Korea	..	..	180.367	..
Latvia	2.310	2.621	1.910	1.774
Lithuania	5.679	6.200	6.674	7.081
Luxembourg	8.397	7.073	10.130	9.014

Netherlands	121.195	132.362	141.024	145.241
Norway	10.721	10.615	11.132	14.138
Poland	162.383	179.180	182.006	175.144
Portugal	13.360	14.368	14.739	15.895
Slovak Republic	8.425	8.863	10.607	12.402
Slovenia	4.547	4.686	5.494	8.221
Spain	118.562	110.519	128.959	137.823
Sweden	156.307	167.027	141.626	138.668
Switzerland	..	..	..	..
Türkiye	67.384	73.075	75.535	97.294
United Kingdom	241.690	263.320	277.255	282.210
There are various sectors including agriculture, mining, quarrying, manufacturing industry, energy production, water purification and distribution, construction, etc.).				

Source: adapted from OECD.Stat, (n.d.)

In the fight against the waste problem, recycling methods are followed first. Conversion of waste into energy or raw materials reduces the negative impact of the amount of waste on the environment and contributes to sustainability (Sensoneo, n.d.). This study aims to explore how businesses employ sustainable policies for recycling and waste reduction. This study is a review paper and uses secondary data sources. Many businesses and industries have increased carbon emissions and environmental pollution. The pressure of green consumers and the rising environmental values has changed the production process in the context of sustainability. Especially, using recycled materials is an important sustainable policy in the production process to reduce waste and carbon emissions. This study selected some businesses and industries to explore the usage of recycling and waste reduction in the production process. The fashion industry, electronic industry, and furniture industry were selected for this study. The below part will examine industries and businesses employing recycling and waste reduction.

2. The Fashion Industry and Sustainable Fashion

The fashion industry is seen as an industry that seriously pollutes the environment. For example; According to the data in 2017, 80% of textile products were thrown away in the USA alone and it was seen that 13 million tons of waste were released into the environment. The use of recycled textile products for waste reduction is a new alternative. Although some fashion brands face the accusation of greenwashing, increasing the use of recycled clothing for waste reduction can yield beneficial results for society in the fight against climate change (Berküsü, 2021). It can be said that there are 2 basic options for recycled textile products in the fashion industry. These are "mechanical fiber recycling" and "chemical fiber recycling". In chemical recycling

technology, polyester and certain nylons are re-processable under current conditions (Gould, 2015). Brands that follow a recycling policy in the fashion industry collect and classify old products and send them for recycling after checking whether they can be reused or not (Güner, 2021). For a circular economy in the fashion industry, recycling textiles must result in a product (i.e. a fiber or yarn) that can replace the original material on the market with a process with a lower total carbon footprint. In this case, recycling the fibers in a closed loop will reduce carbon emissions and other impacts due to the reduction in the extraction and processing of raw materials. This concept is often referred to as 'fiber-to-fiber' recycling and has received more attention in recent years. On the other hand, it should be noted that just because a garment is made from recycled materials does not automatically mean that it is recyclable (Ruban, 2021).

When investigating businesses that employ recycling and waste materials in production, it is seen that some businesses have transformed their production process into sustainable production, and some of them are established based on the sustainability principle.

Businesses that later switched to a sustainable production policy:

- **H&M:** H&M uses mechanical recycling technology as part of its sustainable policies. As a result of recycling natural fibers such as cotton and wool, new textile material can be obtained, but this new material is of lower quality. To increase the quality, recycled textile materials - fibers should be mixed with virgin fibers (Gould, 2015).
- **Adidas:** Adidas began to collaborate with Parley for the Oceans in 2015 and launched a recycling project. Adidas has used recycled plastics for production since 2015. Adidas claimed that it saved 2.810 tonnes of plastic from the ocean in 2018. When production is made with recycled polyester, less water, and fewer chemicals are consumed and pollution is thought to be prevented (Morgan, 2020).
- **Nike:** To reduce the carbon impact created by the manufacture of the products, Nike has used recycled "space waste yarn" (Kinder, 2020).
- **Gucci:** Gucci used recycled and sustainable materials for its collection "Off The Grid" to reduce waste, carbon emissions, and environmental pollution. The main material of this collection includes plastics, old materials going to landfills, fishing nets, etc.
- **Stella McCartney:** Stella McCartney used recycled materials in the production process and also collaborated with Parley for the Oceans when collecting recycled plastics and materials (Stella McCartney, 2017).

With the new rising trend of sustainable fashion, there are many sustainable enterprises in this industry. Sustainable enterprises perform based on the principle of sustainability.

There are some examples of sustainable fashion businesses in Table 2:

Table 2: Businesses that produce with an innate sustainable policy

Sustainable Fashion Businesses	Sustainable Policy
For Days	The textile products produced by the company are produced with a closed-loop system that recycles endlessly and can be recycled when the products are returned.
Allbirds	The content of the shoes produced is based on 100% recycled materials.
Rothy's	The company, which produces women's shoes, uses recycled plastic in the production process.
Recover	The company uses all kinds of recycled materials in the production process.
Ecoalf	The company uses all kinds of recycled materials in the production process and launches exclusive products to the market.
Rapanui Clothing	The company produces organic t-shirts based on recycled materials.
Antiform	The company manufactures products made from recycled materials.
Les Sublimes	The products produced by the company are based on recycled cashmere material. This material is approved by Oeko-Tex and labeled as the Global Recycled Standard.
Farrah Floyd	The company produces products based on recyclable materials.
Mud Jeans	The company produces recycled denim and plans to produce 100% recycled jeans in 2020.
La Petit Mort	The company sells recyclable products.
Bleed	The products produced by the company consist of 100% recycled materials.
Jan n' June	The content products produced by the company include recycled polyamides and polyester.
Swedish Stockings	The company is the only business globally to manufacture socks containing 100% recycled materials.

Source: adapted from CBI, 2021

3. Electronic Industry and E-waste businesses

An increasing problem of electronic waste has come to the fore, as a result of the increase in the use of electronic products and tools and the dynamic development of technology. Unfortunately, as with the plastic waste problem, the electronic waste problem is growing rapidly. As increasing the quantity of waste from consumer electronic products, many threats arise for the future. Therefore, the e-waste phenomenon stands out within the scope of sustainable policies. It is aimed to reduce the amount of e-waste and the harmful effects of e-waste

through e-waste recycling (Global Industry Analysts, Inc., 2022).

The facilitation of life by technology and the opportunities provided by communication-information technologies (ICT) have made people dependent on mobile electronic devices such as laptop computers, tablets, and smartphones. The opportunities provided by these tools have come to the fore, especially in the Covid-19 crisis. As a result of reduced physical mobility due to the Covid-19 crisis, mobile communication tools have enabled people to carry out their existing education and business activities remotely (Yıldırım et al. 2021). In addition, it has been observed that many public services, especially health, are provided via mobile vehicles (Öncü et al. 2021, Yıldırım and Bostancı, 2021, Bostancı et al., 2022).

What will happen after the consumption of technology and electronic tools?

The main problem arises when electronic devices and products are released into nature as post-consumption waste. At this point, the e-waste industry has come to the fore as a new venture area in both developed and developing countries (Great Lakes Electronics Corporation, n.d.). It should be noted that e-waste management is a complex business. Because the content of electronic tools and products must be correctly separated and recycled. There are many materials harmful to nature and human life in e-waste. E-waste is considered the second largest non-disposal waste in the world after plastic waste. It is stated in the Statista report that 60 million e-waste is released into nature every year. Many benefits can be derived from e-waste management and recycling of electronic products. For example; "The demand for raw materials can be reduced; greenhouse gas emissions, carbon emissions can be reduced; the environment can be protected; some production costs can be saved; It can be ensured that natural resources are used more efficiently" (The Admin (Planning Tank), 2021).

According to the United Nations, e-waste includes a higher quantity of rich ore (40-50 times) than the amount mined from the earth. E-waste management and effective recycling are essential in order not to release substances such as "mercury, lead, mercury, cadmium, and chromium" contained in old electronic devices and products into the environment. Consumers can recycle their personal information after deleting it from their old devices. Every electronic device that is recycled can prevent extra pollution in nature. With many campaigns, consumers are trying to be included in electronic recycling programs. For example; Staples, Office Depot, and BestBuy offer consumer electronic products recycling programs, and some companies such as Call2Recycle provide opportunities for the recycling of cell phones and cell phone batteries (LeBlanc, 2019).

The term e-waste is used for electronic tools and equipment. In this respect, the scope of the concept of e-waste is quite wide. Types of e-waste can be categorized for household or

individual consumers as Table 3:

Table 3: E-Waste Category:

Category	Products
Electronic products (mostly mobile devices) within the scope of ICT (information communication technology)	Desktop, laptop, and tablet computers, mobile phones, computer and mobile phone batteries, printers, keyboards, modems, monitors, computer mice, docking stations, hard disk drives, battery chargers, and accessories
White household goods, small household appliances (durable consumer goods)	TVs, refrigerators, air conditioners, washing machines, rice cookers, microwaves and toasters, electric kettles, food processors and mixers, electric fans, DVD/video/music players, radios, hi-fis, vacuum cleaners
Other electrical and non-durable consumer goods	Lamps and lighting devices, batteries, electronic toys, sports, and entertainment equipment, etc.

Source: adapted from National Environment Agency, (n.d.).

According to e-waste measurements (see Table 4), Asia (24.9 Mt) comes first, America (13.1 Mt), and Europe (12 Mt) comes second. According to the amount of e-waste production per capita, Europeans (16.2 kg), Oceania (16.1 kg), and America (16.1 kg) come. Only 17.4 percent of the total global e-waste amount can be collected and recycled. When we look at the recycling rates, Europe recycles the most in the first place with 42.5%. Asia (11.7%) comes in second place (Ruiz, n.d.).

Table 4: Worldwide e-waste amounts and recycling rates

Region*	E-waste *		Recycling Rate (%)
	Total (mt)	Per capita (Kg)	
The Americas	13.1	13.3	9.4
Europe	12.0	16.2	42.5
Asia	24.9	5.6	11.7
Africa	2.9	2.5	0.9
Ocean	0.7	16.1	8.8

*Based on E-waste monitor 2019

Source: adapted from Ruiz, (n.d.)

Every e-waste accumulated in nature returns negatively to human health. Electronic wastes accumulated in nature begin to release toxic substances such as lead and mercury

into the soil, air, and water. Due to the increase in toxic substances released into nature, human health will also be adversely affected. For example; In a study conducted in China, it was determined that there was an increase in lead levels from the blood of children and stated that incorrect practices released more lead to nature as a result of e-waste recycling (Monika, 2010). Leaving e-waste alone in nature or incorrect e-waste recycling will also harm people and nature. E-waste management and recycling of electronic products need to be done very carefully. In other words, the contents of electronic products should be defined separately from each other and each material should be separated according to its characteristics (Pinto, 2008). Many leading brands that follow sustainable policies are trying to contribute to electronic recycling. For example (Sadoff E-Recycling & Data Destruction, 2022):

- **Amazon:** Amazon has a recycling program for Kindle devices. When consumers' Kindle devices break down or want to be replaced, Amazon takes back the old ones free of charge. Consumers can contribute to the recycling of Kindle devices by Amazon after ensuring their information security.
- **Canon:** Canon takes back any broken or obsolete consumer and office products. Thus, it recycles old and deteriorated electronic products.
- **Sprint:** Sprint has an EPA-approved recycling program. Sprint recycles the phones it collects.
- **Dell:** Dell and Ban run an e-scrap flow program. It follows the scraps collected in the recycling of electronic products.

Although plastic waste is primarily on the world agenda, electronic waste has also begun to be recognized. More than 50 million tons of e-waste is released into the environment every year, and by 2050 these numbers may double (Straits research, 2020).

In Table 5, 10 pioneer corporations perform in the e-waste market.

Table 5: Businesses in a market of E-Waste and Recycling

Business	Origin	Founded	Market Area
Aurubis AG	Germany	1866	The company uses and converts complex metal scrap metals and metal-containing recycling materials as metal recycling.
Umicore	Belgium	1989	The company provides clean mobility solutions in many areas, as well as dealing with recycling, energy-surface technologies, and

Sims Metal Management Limited	The U.S.	1917	catalysis. The company is engaged in the metal recycling business.
Boliden	Sweden	1931	The firm is a recycling business that provides high-quality metals for its industrial customers.
Stena Metall Group	Sweden	1939	The firm does business in the fields of recycling, aluminum, electronic recycling, oil, steel, components, trade, and finance.
Tetronics (International) Limited	The U.K.	1964	The firm does business in the waste recovery industry.
Electronic Recyclers International, Inc.	The U.S.	2002	The company is engaged in the decommissioning, recycling, and refurbishment of a wide variety of electronic equipment.
Enviro-Hub Holdings Ltd.	Singapore	1998	It is seen that the company does business in the fields of electronic waste (e-waste) and e-waste recycling in terms of recycling.
TRIPLE M METAL LP	Canada	1975	The company is engaged in the metal recycling business.
Global Electric Electronic Processing (GEEP)	Canada	1985	The firm engages in electronic asset management and the electronic recycling business.

Source: adapted from Meticulous Research, (2022).

As the technology of smartphones develops, it is seen that leading brands attach importance to recycling projects as a solution to the waste problem that arises as a result of new models replacing old ones. For example; Apple and Samsung have begun to increase the use of recycled materials and materials for the materials of their smartphones. Samsung has announced that it aims to realize 100% recycled content in the products it produces by 2050. Apple, on the other hand, stated that one-fifth of the materials in the products it produced in 2021 consisted of recycled materials (Eadicicco, 2022).

4. Furniture Industry and Recycling Policies

It is time for the furniture industry to take on some roles and responsibilities in environmental pollution responsibility. The European Furniture Manufacturers Federation (UEA) statistics indicate that it constitutes more than 4% of the total municipal solid waste (MSW) flow. After consumption of old furniture products and waste accumulates as garbage and 80%-90% of EU furniture waste is incinerated or 10% can be recycled (Mobilya Araştırma Enstitüsü, 2021). For a product of furniture to be sustainable, its life span is important in the cycle from raw material to the recycling process. Life span refers to the life in the consumption and waste process starting from the production process of furniture. More efficient use of existing materials is important for businesses in the sustainable furniture sector. At this point, making use of recyclable materials and staying away from adhesives, paints, and varnishes containing harmful chemicals are followed as a sustainable policy (İnanç, 2022). Recycling and waste reduction policies are also rising trends in the furniture industry. In Türkiye, it can be seen that recycling and waste reduction policies are employed in the context of sustainable development. Mr. Güleç (the board chairman of MOSFED (Furniture Associations Federation)) determined that the furniture industry has always had an approach of renewing, polishing, and reusing the materials used, despite the dominance of the disposable approach in some sectors. In the furniture sector, content including fabric pieces that are waste is made and brought to the sector. Small pieces of sponge have scraped again and used in pillows and fillings. Wood chips, in particular, have been used for years. In short, the furniture industry can be considered a recycling-oriented industry (Aylin, 2022). Not only material used, but it is also important to provide a sustainable design within the furniture. While meeting the demands and needs of the increasing population, sustainable designs and furniture production without disturbing the balance of ecological systems are important for a sustainable world. It should also be among the primary sense of the sector that consumers understand sustainable designs correctly and turn to sustainable designed furniture in their preferences (Güneş and Demirarslan, 2020).

The increasing use of recycled pet bottles in the fashion industry is among the prominent methods in the furniture and decoration industry globally. As fabric, fabrics made from recycled plastic bottles are included in furniture products. It can be said that the changing consumer preferences and attitudes with the Covid-19 crisis are also focused on environmental trends in the furniture and decoration market. During the use of raw materials, it is seen that various recycled materials take place more and more instead of natural fibers (Sabah, 2021).

While meeting the demands of furniture consumer brands and buyers, the materials used in production and the issues related to the circular economy are reviewed. As seen in Table 6, some examples are given:

Table 6: Furniture Brands that employ recycling

Brands	Sustainability policy
Haworth	The firm follows a sustainable policy in chair designs. It aimed to use 100% recycled materials in chair design and planned to achieve the circular economy target by 2025.
Emeco	Emeco has produced the 1006 Navy chair, and the most important feature of this chair is that it is made from 100 recycled aluminum and is infinitely recyclable. The brand aims to continue as a "carbon neutral" brand.
Ligne Roset	Ligne Roset has been operating in the furniture industry since the 70s, following a sustainable policy. Each of the brand's factories in France has recycling and waste sorting facilities.
Andreu World	Nuez Lounge Bio is manufactured in the form of a biodegradable and compostable chair. The product contains 100% recyclable materials.

Source: adapted from Lim, 2022

The sustainability of furniture made from recycled materials and the minimization of their negative effects on the environment have led to the diversification of the materials used in design and production. For example; Putting forward sustainable designs, Philippe Starck has created a furniture collection using vegan leather. The feature of this vegan leather is that it is produced from apple seeds and peel (Pownall, 2019).

Modalife in Turkey is a company that tries to provide sustainable service in the furniture industry with its "Biomass Permit Certificate and "Zero Waste Certificate". Modalife is the first company in the furniture industry to receive a Zero Waste Certificate as part of the Zero Waste Project in Turkey. In Modalife, plastic waste is sent to the recycling factory. All of the plastic raw materials needed for Modalife products are obtained from Modalife's recycling factory. It is stated that every day at the facility, 32 tons of plastic that can be waste to nature are converted into raw materials, while energy equivalent to the annual need of 163 families and oil equivalent to 106 barrels are saved every day (Akbayrak, 2022).

5. Conclusion

The dominance of environmental quality (Sinha et al., 2020a; Sinha et al., 2020b), protection of biodiversity (Opoku, 2019; Kaplan and Yıldırım, 2023; Kaplan et al.,

2022); and sustainable production-consumption-technology (Zakari et al., 2022; Gasper et al., 2019; Yıldırım et al., 2016) themes stand out in 2030 Sustainable Development Goals under the threats of climate change and global warming. In this respect, it has become necessary to follow sustainable policies within both institutional and country strategies for a sustainable future. While the development of industry contributes to economic growth and employment positively, the environmental quality is getting worsen (Yıldırım et al., 2021). The efficient management of waste and recycling can support sustainable policies for businesses and industries in the long term. Collaboration between governments, individuals, and businesses is important to reduce environmental pollution. When considering the rising quantity of waste in the world, many businesses have focused on waste reduction and recycling policies in recent years. As it was purposed, this study reviewed the furniture industry, fashion industry, and electronic industry to explore waste reduction and recycling policies. It was seen that some businesses were born to be sustainable businesses as performing recycling. On the other side, some businesses have adopted sustainable production and sustainable policies. The fashion industry and electronics industry were seen as bigger pollutants for the environment rather than the furniture industry. Especially, it can be said that e-waste will be a huge trouble in the short term.

It is thought that the longer period of use of furniture products and their use as more durable consumer goods, cause these products, which are released to the environment as waste, to accumulate more slowly. On the other hand, it can be said that the fast-fashion products of the fashion industry are more likely to be released into nature as waste and produce more waste in quantity, causing brands operating in this industry to tend to more waste management and recycling projects. In terms of electronic products, the fact that products such as white goods and small household appliances have a long period of use and are more durable consumer goods ensure that these products are released into nature after longer consumption as waste. However, the rapid technology renewal in mobile tools and equipment and ICT products among electronic products causes these products to be quickly released into nature as waste. At this point, it is recommended that recycling strategies focus on mobile equipment and ICT products. The possibilities of manufacturers to use both alternative natural materials and recycled materials in the furniture sector paint a more positive picture of the long-term sustainability of this sector. With the transition of the fashion industry to sustainable fashion, it is seen that many brands have started to produce collections with recycled materials.

The brands discussed in this study were compiled from current sources. Therefore, the assumptions of the study are based on secondary sources. In addition, the issue of greenwashing should be noted as a problem that many recycling brands face from time to time. Based on the assumption that the claims of brands operating in the furniture, fashion, and electronics industries and following

recycling policies are true, the study thinks that positive steps have been taken in the name of sustainability. The reality and accuracy of the sustainability policies should be confirmed by carefully examining the brands that implement waste management and recycling. Otherwise, the danger of greenwashing can get in the way of sustainability.

Reference

- Akbayrak, E. (2022). MODALIFE'DAN "DAHA YEŞİL BİR GELECEK" HEDEFİ, <https://www.stendustri.com.tr/otomasyon/modalifedan-daha-yesil-bir-gelecek-hedefi-h116810.html> (accessed: 25.11.2022).
- Aydin, A. R., (2022). Mobilyada 'kullan-at' anlayışı yok, <https://www.milliyet.com.tr/ekonomi/mobilyada-kullan-at-anlayisi-yok-6843117> (accessed: 25.11.2022).
- Berksü, Z.Ö. (2021). Modanın Yeni Trendi Geri Dönüşüm ve Sürdürülebilirlik Sorunu, <https://www.oggusto.com/surdurulebilir-yasam/modada-geri-donusum-ve-surdurulebilirlik-sorunu> (accessed: 25.11.2022).
- Bostancı, S. , Yıldırım, S. & Erdoğan, F. (2022). A review on e-Government Portal's services within Hospital Information System during Covid-19 pandemic . *Konuralp Medical Journal , COVID-19 , 271-279 . DOI: 10.18521/ktd.1036010*
- Bostancı, S. H., & Yıldırım, S. (2021). Sustainable Communities vs. Climate Refugees: Two Opposite Results of Climate Change. In C. Popescu (Ed.), *Handbook of Research on Novel Practices and Current Successes in Achieving the Sustainable Development Goals* (pp. 298-319). IGI Global. <https://doi.org/10.4018/978-1-7998-8426-2.ch015>
- Bin-Nashwan, S.A., Hassan, M.K. and Muneza, A. (2022), "Russia-Ukraine conflict: 2030 Agenda for SDGs hangs in the balance", *International Journal of Ethics and Systems*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/IJOES-06-2022-0136>.
- CBI, (2021). The European market potential for recycled fashion, <https://www.cbi.eu/market-information/apparel/recycled-fashion/market-potential> (accessed: 25.11.2022).
- Eadicicco, L. (2022). A Fully Recycled Phone Is a Lot Harder Than It Sounds, Even for Samsung and Apple, <https://www.cnet.com/tech/mobile/a-fully-recycled-phone-is-a-lot-harder-than-it-sounds-even-for-samsung-and-apple/> (accessed: 25.11.2022).
- Gasper, D., Shah, A. and Tankha, S. (2019), *The Framing of Sustainable Consumption and Production in SDG 12*. *Glob Policy*, 10: 83-95. <https://doi.org/10.1111/1758-5899.12592>

- Global Industry Analysts, Inc., (2022). Global Electronics Recycling Market to Reach \$65.8 Billion by 2026, <https://www.prnewswire.com/news-releases/global-electronics-recycling-market-to-reach-65-8-billion-by-2026--301491265.html> (accessed: 25.11.2022).
- Great Lakes Electronics Corporation, (n.d.). Recycling E-waste Industry is Growing Worldwide, <https://www.ewaste1.com/recycling-ewaste-becoming-fast-growing-industry-worldwide/> (accessed: 25.11.2022).
- Güner, B. (2021). Modada geri dönüşüm, <https://www.milliyet.com.tr/pembenar/bengu-guner/modada-geri-donusum-2912122> (accessed: 25.11.2022).
- Güneş, S. and Demirarslan, D. (2020). Sustainability and Environmental Approaches in Furniture Design, *International Journal Of Humanities And Art Researches*, 5(6), pp:81-99, <https://dergipark.org.tr/en/download/article-file/1297515>
- Gould, H. (2015). Waste is so last season: recycling clothes in the fashion industry, <https://www.theguardian.com/sustainable-business/sustainable-fashion-blog/2015/feb/26/waste-recycling-textiles-fashion-industry> (accessed: 25.11.2022).
- İnanç, Z. (2022). Sürdürülebilir Mobilya: Ekolojik Ev Dekorasyonunun Temeli, <https://www.plumemag.com/surdurulebilir-mobilya-ekolojik-ev-dekorasyonunun-temeli/> (accessed: 25.11.2022).
- Kaplan, M. & Yıldırım, S. (2023). The Sustainability of Seafood Market under the Attack of Invasive Alien Species: A Review on Turkish Marines, A. Ben Salem, L. Rhazi & A. Karmaoui (Ed). *Climatic and Environmental Significance of Wetlands: Case Studies from Eurasia and North Africa*, IGI GLOBAL, in pressing.
- Kaplan, M., Yıldırım, S. and Yıldırım, D.C. (2022), "Pufferfish versus lionfish: comparing risks for Turkish marine economics", *Marine Economics and Management*, Vol. 5 No. 2, pp. 173-187. <https://doi.org/10.1108/MAEM-09-2022-0008>
- Kinder, O. (2020). NIKE SPORTS SHOES FROM RECYCLED MATERIALS, http://www.oceansplasticcleanup.com/Cleaning_Up_Operations/Nike_Shoes_Ocean_Plastic_Recycled_Recycling_Sports_Rubber.htm (accessed: 25.11.2022).
- LeBlanc, R. (2019). E-Waste and the Importance of Electronics Recycling, <https://www.liveabout.com/e-waste-and-the-importance-of-electronics-recycling-2877783> (accessed: 25.11.2022).
- Lim, J. (2022). The Furniture Industry's Circularity, <https://www.luxuo.com/properties/the-furniture-industrys-circularity.html> (accessed: 25.11.2022).
- Meticulous Research, (2022). TOP 10 COMPANIES IN E-WASTE MANAGEMENT MARKET, <https://meticulousblog.org/top-10-companies-in-e-waste-management-market/> (accessed: 25.11.2022).
- Mobilya Araştırma Enstitüsü, (2021). Mobilya Sektöründe Döngüsel Ekonomi, http://www.omsiad.org.tr/pdf/omsiad_20210210__2787896991.pdf (accessed: 25.11.2022).
- Monika KJ. E-waste management: as a challenge to public health in India. *Indian J Community Med.* 2010;35(3):382–385. doi: 10.4103/0970-0218.69251
- Morgan, C. (2020). How Adidas is turning plastic ocean waste into sneakers and sportswear, <https://www.businessinsider.com/adidas-sneakers-plastic-bottles-ocean-waste-recycle-pollution-2019-8> (accessed: 25.11.2022).
- Munasinghe, M. (2002). The Sustainomics Transdisciplinary Meta-framework for making Development more Sustainable: applications to energy issues, *International Journal of Sustainable Development*, 4 (2), pp.6-54.
- National Environment Agency, (n.d.). 3R Programmes and Resources, <https://www.nea.gov.sg/our-services/waste-management/3r-programmes-and-resources/e-waste-management> (accessed: 25.11.2022).
- OECD.Stat, (n.d.). Generation of waste by sector, <https://stats.oecd.org/> (accessed: 29.11.2022).
- OECD (2022), The Short and Winding Road to 2030: Measuring Distance to the SDG Targets, OECD Publishing, Paris, <https://doi.org/10.1787/af4b630d-en> (accessed: 30.11.2022).
- Opoku, A. (2019). Biodiversity and the built environment: Implications for the Sustainable Development Goals (SDGs), *Resources, Conservation and Recycling*, Volume 141, 2019, Pages 1-7
- Öncü, M. A. , Yıldırım, S. , Bostancı, S. & Erdoğan, F. (2021). The Effect of COVID-19 Pandemic on Health Management and Health Services: A Case of Turkey . *Duzce Medical Journal* , 23 (Special Issue) , 61-70 . DOI: 10.18678/dtfd.860733
- Pownall, A. (2019). Philippe Starck covers furniture for Cassina with apple-based vegan fabric, <https://www.dezeen.com/2019/01/24/philippe-starck-cassina-apple-ten-lork-vegan-design/> (accessed: 25.11.2022).
- Rodrik, D. (2006). INDUSTRIAL DEVELOPMENT: STYLIZED FACTS AND POLICIES Harvard University, Draft, August, 2006.

- http://cemi.ehess.fr/docannexe/file/2741/rodrik_2006_2.pdf (accessed: 30.11.2022).
- Ruiz, A. (n.d.). Latest Global E-Waste Statistics And What They Tell Us , <https://theroundup.org/global-e-waste-statistics/#top> (accessed: 25.11.2022).
- Ruban, C. (2021). Moda Endüstrisinde Gerçekten 'Döngüsel' Bir Ekonomiye Nasıl Yaratabiliriz?, <https://tr.textilejourney.com/post/moda-end%C3%BCstrisinde-ger%C3%A7ekten-d%C3%B6ng%C3%BCsel-bir-ekonomiyi-nas%C4%B1-yaratabiliriz> (accessed: 25.11.2022).
- Sabah, (2021). Mobilya sektöründe geri dönüşüm! Koltuklar pet şişeden, <https://ekonomi.haber7.com/ekonomi/haber/3121355-mobilya-sektorunde-geri-donusum-koltuklar-pet-siseden> (accessed: 25.11.2022).
- Sadoff E-Recycling & Data Destruction, (2022). Electronics Recycling & Business: 4 Model Companies that Do I.T. Right, <https://sadoffelectronicsrecycling.com/blog/4-companies-electronic-recycling/> (accessed: 25.11.2022).
- Sensoneo, (n.d.).Global Waste Index 2019, <https://sensoneo.com/global-waste-index-2019/> (accessed: 25.11.2022).
- Sinha, A., Sengupta, T., Saha,T. (2020a). Technology policy and environmental quality at crossroads: Designing SDG policies for select Asia Pacific countries, *Technological Forecasting and Social Change*, Volume 161, 2020
- Sinha, A., Sengupta, T., Alvarado, R. (2020b). Interplay between technological innovation and environmental quality: Formulating the SDG policies for next 11 economies, *Journal of Cleaner Production*, Volume 242, 2020, 118549
- Stella McCartney, (2017), Recycled nylon and polyester, <https://www.stellamccartney.com/us/en/sustainability/recycled-nylon-polyester.html> (accessed: 25.11.2022).
- Straits research, (2020). Top 10 E-Waste Management Companies in the World, <https://straitresearch.com/blog/top-10-e-waste-management-companies-in-the-world>
- The Admin (Planning Tank). (2021). Importance of E-waste Management: Top Reasons Justifying Why it's Crucial?, <https://planningtank.com/environment/importance-of-e-waste-management> (accessed: 25.11.2022).
- The World Bank, (n.d.). Trends in Solid Waste Management, https://datatopics.worldbank.org/what-a-waste/trends_in_solid_waste_management.html (accessed: 25.11.2022).
- United Nations, (2015). Transforming our world: the 2030 Agenda for Sustainable Development , General Assembly, A/RES/70/1 <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N15/291/89/PDF/N1529189.pdf?OpenElement> (accessed: 30.11.2022).
- United Nations, (2022). The Sustainable Development Goals Report 2022, United Nations Publications, 300 East 42nd Street, New York, NY, 10017, United States of America.
- , <https://unstats.un.org/sdgs/report/2022/The-Sustainable-Development-Goals-Report-2022.pdf> (accessed: 30.11.2022).
- Yıldırım, S., & Yıldırım, D. Ç. (2020). Achieving Sustainable Development Through a Green Economy Approach. In S. Patti, & G. Trizzino (Ed.), *Advanced Integrated Approaches to Environmental Economics and Policy: Emerging Research and Opportunities* (pp. 1-22). Hershey, PA: IGI Global.
- Yıldırım, S. (2021). 3R Principle in Household Energy Consumption Patterns: A Case of Turkish Households. In M. Danish, & T. Senjyu (Eds.), *Eco-Friendly Energy Processes and Technologies for Achieving Sustainable Development* (pp. 88-107). Hershey, PA: IGI Global.
- Yıldırım, S. (2020), The consumer role for sustainable development: how consumers contribute sustainable development goals, In Chkoniya, V., Madsen, A.O. and Bukhrashvili, P. (Eds), *Anthropological Approaches to Understanding Consumption Patterns and Consumer Behavior*, Hershey, PA: IGI Global, pp. 325-341.
- Yıldırım, S., Bostancı, S.H., Yıldırım, D.Ç. and Erdoğan, F. (2021), "Rethinking mobility of international university students during COVID-19 pandemic", *Higher Education Evaluation and Development*, Vol. 15 No. 2, pp. 98-113. <https://doi.org/10.1108/HEED-01-2021-0014>
- Yıldırım, S. and Bostancı, S.H. (2021), "The efficiency of e-government portal management from a citizen perspective: evidences from Turkey", *World Journal of Science, Technology and Sustainable Development*, Vol. 18 No. 3, pp. 259-273. <https://doi.org/10.1108/WJSTSD-04-2021-0049>
- Yıldırım, S., Yıldırım, D.Ç., Aydın, and Erdogan F. (2021). Regime-dependent effect of tourism on carbon emissions in the Mediterranean countries. *Environ Sci Pollut Res* 28, 54766–54780 (2021). <https://doi.org/10.1007/s11356-021-14391-7>
- Yıldırım, S., Yıldırım, D. Ç., & Gedikli, A. (2016). Sustainable Consumption Trends in the World in the Context of Green Economy and Sustainability. In M. Erdoğan, T. Arun, & I. Ahmad (Ed.), *Handbook of Research on Green Economic Development Initiatives and Strategies* (pp. 65-84). IGI Global. <https://doi.org/10.4018/978-1-5225-0440-5.ch004>
- Zakari, A., Tawiah, V., Khan, I., Alvarado, R., Li, G. (2022). Ensuring sustainable consumption and production pattern in Africa: Evidence from green energy perspectives, *Energy Policy*, Volume 169, 2022, 113183