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Sustainability, Policy, and Global Impact: A Comparative Analysis

Editor

Abdullah EROL



SUSTAINABILITY, POLICY, AND GLOBAL IMPACT: A COMPARATIVE ANALYSIS

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PREFACE

At a time when we are facing many challenging issues around the world, the concepts of sustainability, policy and global impact could not have become more important. Climate change, resource depletion, social inequality and many other problems pose serious threats to humanity. However, there is hope to address and resolve these issues. To share this hope and raise awareness on these issues, we present the book “Sustainability, Policy and Global Impact”.

This book aims to help us understand the complex relationships of sustainability, policy and global impact. Sustainability aims to use resources wisely, respect the environment and increase social welfare, taking into account the needs of future generations. Politics plays a critical role in achieving these goals. Public policies shape the distribution of resources, environmental protection, and social justice. Global impact helps us understand how sustainability and policy decisions impact internationally.

By addressing these three basic issues, our book aims to provide a resource that will help us understand how we can contribute to the construction of a sustainable future. By bringing together experiences from different disciplines, our authors offer unique perspectives on how sustainability-related policy decisions and global impact can be combined.

We hope that as you read this book, you will develop a deeper understanding of sustainability, policy, and global impact. We also hope that these topics will inspire you to explore how we can contribute to creating a better future for individuals, societies and the world at large.

The book “Sustainability, Policy, and Global Impact: A Comparative Analysis” is here to guide you on the journey of building a sustainable world. As you read this book, we hope you will learn more and be inspired to shape a sustainable future.

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CHAPTER 1

A QUALITATIVE ANALYSIS OF GREEN PURCHASING BEHAVIOR AND GREEN POLICY BUILDING RECOMMENDATIONS BASED ON THE COMPARISON OF AZERBAIJAN, KAZAKHSTAN AND TURKEY

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ABSTRACT

This qualitative research attempts to increase the potential of the trade in green goods segment in the markets of Azerbaijan, Kazakhstan and Turkey as well as finding the factors affecting purchasing intention of consumers towards green products. The green marketing concept proposed that such factors as green product price, green product quality, green advertisement, eco-labeling and packaging, environmental concern and green awareness affect the willingness of consumers to purchase environmentally friendly products. The research has been conducted in the form of semi-structured in-depth interviews with 25 participants from the three mentioned countries, identifying main factors affecting green purchase intention and comparing them with those found in the literature. The findings have been categorized separately for each country and the comparison of the countries with the similarities and differences across each factor was performed. Results of the analysis revealed that each of the factors had an influence on green purchase intention of consumers across three countries. Moreover, challenges and recommendations shared across the countries with regard to popularizing green market have been presented. In this way, besides contributing to the literature, it will assist policymakers in formulating and employing strategies to persuade eco-friendly purchasing, and it will give an opportunity for marketers to generate proper marketing strategies for drawing in clients and guaranteeing ideal sales.

Keywords: Green product, Green policy, Green purchase intention

Jel Classification: F18, M31, Q56

1. Introduction

The topic of environmental sustainability has gained widespread attention across the globe and is still vital as United Nations Climate Change Conference (COP 27) demonstrated and many researchers and analysts attempted to uncover the impact green marketing has on green attitude, green purchase intentions and green purchase intention (consumer buying intention) of individuals across years, nations, and countries.

However, despite the increased interest of the businesses and populations towards environmental sustainability, limited research exists on this topic in countries like Azerbaijan, Kazakhstan and Turkey. There is a relevant need to carry out research on the influence of various green marketing measures on purchase intention of individuals living in the mentioned countries.

This research will encourage trade organizations and institutions operating in the three countries as well as outside to potentially adjust and modify their marketing strategies in order to promote environmentally sustainable intention and behavior among consumers. This may result in potential increase in green consumerism and shift in the lifestyle of population towards a more pro-environmental or pro-green state.

Moreover, the empirical analysis carried out by this research will allow marketers to better understand the current state of green consciousness and factors affecting green purchase intentions and ultimately green purchase behavior or the population of their respective countries.

2. Objective of the Research

To increase the potential of the trade in green goods segment in the markets of Azerbaijan, Kazakhstan and Turkey as well as finding what are the main factors that influence consumers' intention towards buying them in Azerbaijan, Kazakhstan and Turkey:

- To study the conceptual framework of consumer buying intention and attitude towards green (environmentally friendly) products and environment.
- To analyze the consumers awareness towards green marketing and its impact on purchase intention of green products.
- To study the relevant factors which influence purchasing intention towards green products.
- To analyze the role of green marketing on green purchase intention of consumers.
- To discuss possible ways and recommendations of increasing awareness and purchase intention of consumers towards green products.

3. Literature Review

Nowadays, environmental interests and awareness of consumers have come to increase; as a result, more and more consumers have started to demand environmentally friendly products and services from businesses that are known as green products.

Green products are defined as energy efficient, durable and often have low maintenance requirements, free of ozone-depleting chemicals, toxic compounds and don't produce toxic by-products. They are often made of recycled materials or content or from renewable and sustainable sources (Poongodi & Gowri, 2017).

Businesses that emphasize environmental issues and which notice the environmental demands and preferences of consumers have tended to develop and implement green marketing strategies (Agrawal & Das, 2013).

Green marketing is defined as “the holistic management process responsible for identifying, anticipating and satisfying the requirements of customers and society in a profitable and sustainable way” (El Dief & Font, 2010). Green marketing is one of the types of sustainable marketing that represents an integrative approach that emphasizes environmental (green marketing), social value (social marketing) and economic/financial issues in the development of marketing strategies (Bridges & Wilhelm, 2008).

To increase the demand for green products, the majority of the researchers tried to find the factors that affect their green buying intention and the influence of green marketing tools such as the eco-label, eco-brand and environmental advertisement and others (Delafröoz, Taleghani & Nouri, 2014; Aysel & Boztepe, 2012; Agyeman, 2014; Kirgiz, 2016; Dagher & Itani, 2014; Khan & Mohsin, 2017 and others).

The main factors that are highlighted in most cited research studies and are supported by the hypothesis in the literature and will be taken into consideration in the current research are presented next.

3.1. Price

The purchase of green products is discovered to be highly influenced by their functional value (price) and some consumers are willing to pay premium prices for environment-friendly products (Khan & Mohsin, 2017). Price premiums, the excess prices paid over and above the “fair” price that is justified by the “true” value of the product, may be indicators of consumer willingness to pay. (Rao & Bergen, 1992). Majeed, Ahmed & Rasheed (2021), Khan & Mohsin (2017) and many other researchers identified a strong significant (positive) relationship

between the price with green product consumer choice intention. However, Vlonsky, Ozanne, & Fontenot (1999) proposed in their research that marketers must carefully set prices for green products because of consumers' sensitivity to the cost, despite the fact that consumers are willing to pay more for green products.

3.2. Quality

The quality of the free product is one of the most important criteria for consumers to buy green products. Rao & Bergen (1992) states that one reason for which consumers are willing to overpay a premium is to ensure the good quality of the product. The certification of green goods by an independent party proves the green quality of the product and allows them to buy products that do not harm the environment at the same time (Vlonsky, Ozanne, & Fontenot (1999). Aertsens et al. (2011) also state that quality is the precise characteristic that influences the demand and consumption of eco-friendly food. Some research revealed that such product attributes, for example, price and product quality, were more significant than green packaging. The regions of Europe, the USA, Australia, and Canada pay more attention to quality and health parameters of green products than Asian countries; thus, quality and health-related factors are found frequently in their studies, for example, health consciousness, nutritional values, product quality, more than the price of the green products.

3.3. Green advertisement

Green advertisement is an essential part of green marketing, which explores the organization's connections toward greenness in products, services, practice a process. A message that is "eco-friendly" places a premium on ecological, environmental, or nature-friendly themes in order to appeal to environmentally concerned consumers (Banerjee et al., 1995; Zinkhan & Carlson, 1995). They want to learn about the product's features, costs, and overall worth. They also convey where and when things are available, as well as how simple it is to obtain information about them (Kumar, 2014; Leonidou et al., 2013; Karna et al., 2003).

According to Davis (1994), the companies a corporate environmental advertisement generally includes three features. The First provides general information about the company's concern towards the environment; Second, the advertisement details the initiatives are undertaken by the corporation to demonstrate its care for and dedication to environmental improvement. Third, the commercial explains particular environmentally related actions in which the company is involved and/or the outcomes for which the corporate is accountable.

According to Chan (2004) who defines green advertising as statements that the promoted product's or connected industrial processes and the qualities which contributed to the environmental protection or had other valuable outcomes on the environment.

Chan (2004) developed a model in order to evaluate the Chinese consumers' responses to green advertising based on six dimensions: how respondents felt about the advertisement and how they felt about the advertised product, how respondents felt about the advertisement and how they thought the advertisement helped them make a decision about buying the advertised product. The green advertisement was conceptualized as a one-dimensional variable for the sake of this study based on Chan's (2004) work. That's why this study used the term "influencing customer behavior." It means encouraging people to buy environmentally friendly things and highlighting the positive effects of their purchases.

3.4. Eco-labeling

Eco-labeling is a tool for consumers to make environmentally friendly choices and affect how things are manufactured Rex & Baumann (2006). Eco-labels are an important marketing tool because they help sellers and buyers of environmentally friendly products share more information (Sammer & Wustenhagen (2006). According to Sonderskov & Daugbjerg (2011), an eco-label is a product claim that provides customers with reliable and easily accessible information about a product's environmental features. Tang et al. (2004) define eco-label as a type of information tool that often uses a logo to tell consumers about the environmental consequences of purchasing a product. Organic food is a symbol of trustworthiness (Janssen & Hamm, 2011, p. 32). Because of the procedure by which they were made, such things have specific worth for the customer, even if this does not leave materially visible traces in the end result (Albersmeier et al., 2010; Darby & Karni, 1973). Consumers can be certain that products have been manufactured in an environmentally responsible manner by using eco-labels. Much empirical study has previously been done on eco-labeling.

If you buy something, you may not show your environmental concerns, norms, or values, according to Thgersen (2000). He demonstrates buying eco-labeled products is linked to the notion that it contributes to the solution of environmental problems. In a similar line, a number of studies argue that the consumption of eco-labeled products is influenced by the values associated with each label. According to Grankvist & Biel (2001); Hughner et al. (2007); Lea & Worsley (2005); Yiridoe et al. (2005), consumers who think eco-labeled items are healthier, taste better and are more environmentally friendly are more likely to buy them. Research developed a conceptualized model on purchasing behavior in Penang, Malaysia has been examined on the effects of eco-label and eco-brand and environmental advertisement.

Trust is another important factor in eco-labels which is emphasized in the literature. According to Thogersen (2000), the consumer makes a purchase with the label which the trust

only. Based on a manager interview in the 1990s by Wong et al., it was stated that the green marketing involvement movement in the early 1990s was not clear and was confusing, which turned to blackening the creditability of the products. The arguments supported by many other researchers show that consumers are suspicious regarding the claims of green goods. For instant American and British consumers believe that the claims the companies for towards green products are just an excuse to put a higher price on the products. (Peattie, 1995; Eden, 1994; Mohr et al., 1998).

The uncertainty of environmental issues is due to misguided marketing strategies (Peattie, 2001). Based on Eden (1994); MacKenzie (1991); Sønderskov & Daugbjerg (2011), indeed, it's true for many businesses, eco-labeling provides limited trust among consumers where the schemes labeled perform by the state has significant positive in this regard.

According to Ek & Sonderholm (2008) and Salmela & Varho (2006), the level of trust people has in labels affects how much green food they buy. Customer trust in the labeling of organic food makes people buy more organic food, say Padel & Foster (2005); Janssen & Hamm (2012); Daugbjerg & Snderskov (2012); Janssen & Hamm (2012). These studies use people's statements about organic purchases from group interviews, choice experiments, and surveys as their main sources of information rather than keeping track of how many organic products people buy. Consumer trust is an important part of eco-labeling, but few studies have looked at how this affects how many people buy green products.

3.5. Environmental concern

Kim & Choi (2005) provided the following definition for environmental concern – it is a person's intrinsic and personal concern about the environment and its issues and problems. An environmental concern of an individual may be observed in many different ways, it can be “intangible” like a belief or it can be more “tangible”, meaning resulting in real actions and behaviors like buying green, eco-friendly goods or recycling. Many researchers have attempted to analyze the link between environmental concern and consumer purchase intention as well as actual purchase behavior. Results of the study by Kim & Choi (2005) revealed that there is a significant link between environmental concern and green purchase behavior. Another study by Hanson (2013) on the Canadian market revealed that environmental concerns directly affected green purchase behavior and recycling among consumers.

Moreover, Maichum (2016), who analyzed the market of Thailand, has demonstrated that there is a direct link between environmental concern and green purchase intention.

However, not all the researchers unanimously agreed that environmental concern has a strong positive effect on the purchase intentions of consumers for green products. For example, research done by Joshi & Rahman (2019) on the Indian market demonstrated that environmental concern is not a very efficient determinant of the green purchase behavior of consumers. Research studies conducted by Bamberg (2003), as well as Alwitt & Pitts (1996), revealed that environmental concern doesn't have a direct influence on green purchase intention. They stated that environmental concern might affect some other belief-related variables, which will in turn influence green purchase intention and behavior.

To better understand the meaning behind environmental concern and green awareness and the possible influence these two concepts may have on the green purchase intention of consumers, it is also important to explore the notions of green consciousness and green knowledge.

3.6. Green Consciousness

Dunlap & Jones (2002) provide the definition for green consciousness and state that it has relation to the extent to which customers are really concerned about the environment – its problems and issues. Moreover, it is related to the extent of the willingness of consumers to adopt various measures and actions to resolve these environment-related issues. There is an abundance of literature that analyzes the role green consciousness plays in forming the green purchase intentions of individuals. As an example, the results of the study conducted by Hu et al. (2010) state that consumers deemed as more green-conscious have a higher probability of developing positive green purchase intentions. Moreover, Kumar & Ghodeswar (2015) postulate that increased green consciousness positively affects the green purchase behavior of consumers, meaning that an increase in environment-related concerns of individuals pushes them to purchase green products more. Research studies conducted by Michaud & Llerena (2011), as well as Paul et al. (2017), reveal that green consciousness is increasing in Asian and European countries – an issue directly linked with the rise in environmental concern. Jang et al. (2015) reveal that consumers who have been identified as highly green-conscious and hence more environmentally concerned have a higher probability of being loyal in relation to green goods.

3.7. Green knowledge

Green knowledge is another crucial factor to be considered in the context of formulation of consumer buying intentions towards green products. It may be defined as the possession of information on consumers' green buying behavior as well as how ecology affects society (Biswas & Roy, 2015). Green knowledge may be concrete or abstract (Schahn & Holzer

(1990). Concrete means the knowledge about the usage of green goods, which is objective in its nature, while the abstract is related to subjective understanding based on self-perception. Lin & Niu (2018) state that environmental concern leads to green consciousness, which itself increases the green knowledge of consumers and these consumers who have an increased level of green knowledge have a higher intention when it comes to buying and using green products. Rashid (2009) argues that environmental knowledge has a major defining role in shaping the preferences of consumers towards purchasing environmentally friendly products; their interests in buying green products rise because their consumption patterns are heavily impacted by the rise in environmental knowledge. Safari et al. (2018) state that environmental knowledge to the concept of customers being aware and knowing about ecological problems and issues and the ways to resolve them.

3.8. Green Awareness

Suki et al. (2016) and Mourad et al. (2012) argue that environmental or green knowledge directly influences the green awareness of consumers regarding green goods and green awareness is argued to be affecting consumer purchasing intentions and behavior. Consumers who are environmentally or green aware are inclined to alter their whole lifestyle to the benefit of the environment. Suki et al. (2016) state that green awareness is tightly linked with the concept of environmental knowledge as well as the general performance of green goods from an ecological perspective. Research by Paul & Rana (2012) who analyzed the concepts of green behavior and green purchase intentions for organic products demonstrated that green knowledge results in increased green awareness which itself results in increased green purchase intention. Two more research studies by Liu et al. (2012), first on sustainable consumption and the second one on sustainable supply-chain management and green marketing, expressed their belief that being environmentally aware and responsible positively influences intentions towards purchasing particular types of products on the market.

The study will try to identify the factors that influence consumers buying intention with respect to green goods or services in Azerbaijan and Kazakhstan, whether they are the same as in the literature found or some additional ones.

However, there are very few studies on green marketing and its impact on consumers buying behavior in Azerbaijan and Kazakhstan. Therefore, the current research will target the consumer audience of these countries and identify whether there is a trend in purchasing green products and services in Azerbaijan and Kazakhstan and what are the factors (whether they are the same as Price, Eco-labeling, Eco-Brand, Green advertising and Green Aware-

ness as mentioned in the most cited research and papers) that influence consumers' behavior towards buying them.

4. Method and Design

4.1. Geographical Scope of the Study:

The research was limited to major urbanized cities from each country and thus covered the urban the population of Azerbaijan (Baku and Nakhichevan) and Kazakhstan (Nur-Sultan and Almaty), respectively.

4.2. Demographic information

The total number of the participants for this research are 25, which are 9 participants from Azerbaijan and 8 participants from Kazakhstan, 8 participants from Turkey.

As average 48 % of the participant are male and 52 % participants are female between average age of 25 to 45.

The level of income participants is divided for 32 % with high 48% medium level of income, and 20 % with low level of income

The education level of the participants is 32 % with Bachelor degree 36 % Master Degree and 32 % with the Ph.D. level.

The marital status of the participants is 68% single, 4% are married with no children and 28% are married and having children.

Age of the respondents are mostly more than 25 years. The reasoning behind this decision is that individuals with age over 25 are more independent in their choices of the items to be purchased – their decisions are empowered by their preferences and believes, thus suggesting that those individuals who are more concerned about the environment will be able to make potential choice towards green products. (Elham & Wahid, 2011).

4.3. Data collection procedure, coding and analysis

The collection of data was conducted by qualitative technic - in-depth interview with semi-structured questionnaire. The database selected from the green store was used as a basis for the sample. The reasoning behind this decision was to form a sample of individuals with awareness of green goods. The data collection was conducted through zoom application to record and describe the data for subsequent analysis. The collection of the data was stopped once the repeated answers from respondents were received.

The data was analyzed using DelveTool – a comprehensive online software. All the interview answers were recorded and subsequently coded. For the purposes of the coding, major themes have been identified based on main research questions. Then, for each theme, a set of sub-categories was defined which eventually served as main codes for the analysis.

Limitations of the study included: sample size; demographic and geographical scopes.

5. Results (12 pt.)

Results of the carried qualitative analysis are presented in the following table; keywords are highlighted in bold.

Factors	Azerbaijan	Kazakhstan	Turkey	Challenges	Policy Recommendations
1. Knowledge and Awareness	<p>“Ecologically friendly products, are products which are made of natural ingredients, don’t contain chemical alterations and undesirable materials and substances which may negatively impact human organism” [M.M].</p> <p>“Green goods are those which are comprised of natural materials and their packaging and delivery is all done so that it doesn’t hurt our environment, even their packaging and recycling” [A.Z].</p>	<p>“The goods that are produced with no or little damage to the environment.” [D.S.]</p> <p>“Only minority like 10-20% of the population” of Kazakhstan is aware about the green goods and services [B.O].</p> <p>“Mostly the urbanized population who live in big cities like Astana and Almaty, and well educated people are aware” [M.K].</p> <p>“with high income level” [A.T.]</p> <p>“people who lived in foreign countries with higher levels of concern about the environment; self-conscious people.” [B.O].</p>	<p>“Organic goods, and goods which are not harmful for human being, not harmful for environment, manufactured in sustainable way” [M.O].</p> <p>“Environment friendly products” [O.K].</p> <p>“Logistics of green goods should consider green deal requirements and lessen its carbon footprint. Green services should consider the limited resources of earth and use less to enable sustainability of the environment” [E.D].</p> <p>“Probably 20-30% of Turkish population only aware about green goods” [O.K].</p> <p>“They are sustainable, they are good with the environment, they are eco-friendly and they can be reusable” [L.Y].</p> <p>“...didn’t use many chemical ingredients and resorted to organic and natural materials” [I.Y].</p>	<p>“...lack of eco-culture and education” [B.O].</p> <p>“...lack of government’s leadership, such as green procurements, and weak awareness raising to educate consumers” [M.T.]</p> <p>“even if people aware about the environment problems, they still do not sort the garbage, and continue use plastic stuff.” [M.K].</p> <p>“Education in Turkey doesn’t teach anything about the environment at all” [L.Y].</p> <p>“...people in Turkey mostly live in the present and are trying to survive day by day to sustain themselves and their families” [E.O].</p>	<p>“Government should launch different policies ranging from informational campaigns for children to business conferences with potential investors about the ways to increase the accessibility of green goods for ordinary people in the regions.” [T.N].</p> <p>“Government could ... cultivate the eco-habits in the society.” [M.K.]</p> <p>R.G.: “There should be a proper education system to teach others on the exact reasons and purposes of buying green products with real examples.”</p> <p>[M.M.]: “Children should be taught from early years. In elementary schools, there should be a separate subject on this topic.”</p> <p>“First, it should be within the initiative of the companies/factories to raise awareness about green goods and services offered. Factories should allocate money for education of the consumers (through social media, instagram, youtube, workshops) to increase the green product awareness.</p> <p>Secondly, government is responsible for the regulation of the companies’ sustainable production processes, developing sustainable agriculture”..[M.O.]</p>

2. Purchasing Intentions					
2.1. Price of green goods	<p>"I think prices are quite high. That said, I can understand to a certain extent the need to put higher prices on them because the cost of their production is probably higher because now the company has to account for a lot of conditions and limitations and cannot "cut corners" let's say." [E.R.]</p> <p>"I think the price is unreasonably high, but if I buy and feel like the quality is exceptional, I may decide to buy this product more. But generally speaking, the price is too high for me a lot of times" [A.Z.].</p> <p>"...the price of clean products is comparatively higher than regular goods." [F.G.]</p>	<p>"Unfortunately, the prices of green goods are high compared to traditional goods, which brings concerns to the availability and accessibility of those goods to ordinary people." [T.N.].</p> <p>"...recycle goods should be priced cheaper than ordinary one since they are recycled." [D.I.]</p> <p>"...would not prefer to overpay for green products if they have the same level of effectiveness and efficiency as ordinary products." [T.N.]</p> <p>"Usually at least 20% and sometimes 3-4 times more expensive" [B.O.]</p> <p>"Prices on green goods are significantly higher than the ones on ordinary goods" [A.T.]</p>	<p>"In Turkey the prices for green goods are quite high, probably due to their not traditional way of production" [O.K.]</p> <p>"Green goods are expensive in Turkey, minority can afford them" [M.O.]</p> <p>"For Turkey, green products prices are quite high". [E.D.]</p> <p>"Green goods are most definitely overpriced" [L.Y.]</p> <p>"...the price is too expensive. Unreasonably high" [A.Z.].</p> <p>"...the price difference is huge" [E.O.].</p> <p>"I understand that the process of their production may be more expensive and that's why the price is higher, but I don't understand why the difference is so huge. it should not be that way" [I.Y.].</p>	<p>"I feel negative because green recycled goods should be priced cheaper than ordinary one." [D.I.]</p> <p>"Low level of income makes me to think about short-term goals, rather than about the long-term future and the environment in the end. You start to think about the environment when you stop thinking about how to feed and clothe your family." [A.T.]</p> <p>"I would not prefer to overpay for green products if they have the same level of effectiveness and efficiency as ordinary products. If they share the same benefit and the same price, I would prefer to buy a green one." [T.N.]</p> <p>"Sustainability does not directly affect the price, however, many companies sell environmentally friendly products under this slogan at very high price, times." [A.T.]</p> <p>"However, the deficit of domestic production of these goods compared to ordinary ones and the following increase of its prices puts a serious obstacle on their equal competitiveness." [T.N.]</p> <p>"I don't think that green goods should be priced higher than ordinary one because it will not make people to switch to green goods. The inflation rate in Turkey is very high and high price for green goods is not logical." [O.K.]</p> <p>"But sometimes some companies use the green trend and green labels to get more money, even if their products are not Green." [M.O.]</p> <p>"...companies are scamming people because they don't change the process of production and just stick the eco-label to try to fool people into thinking that their products are green when in fact they are absolutely not" [E.O.].</p>	<p>"To increase the accessibility of green goods and services to the general public the prices of those goods should be set lower than for ordinary ones. To stimulate the supply side, the government should provide financial assistance to green producers via subsidization and loan grants." [T.N.]</p> <p>"It's browner products that probably need to be taxed more to make green ones more competitive." [M.T.].</p> <p>"The price should be less, so everyone can buy." [E.D.]</p> <p>"Government must engage, this is critical. New modern technologies must be installed and used to make the production of green products less costly thus, making the price more attractive as it is the critical decision factor" [A.Z.]</p>

<p>2.2. <i>Quality of the green goods</i></p>	<p>"...in my personal experience, the products which were stated to be environmentally clean have lower quality compared to regular products. Like those eco-straws in the restaurant, they were really bad." [R.G.]</p> <p>"For me the most important criterion is the quality of any product." [K.S.]</p> <p>"But I usually pay attention to quality of the product. For me the quality and price are the most important factors." "... if I buy and feel like the quality is exceptional, I may decide to buy this product more." [A.Z.]</p> <p>"... I think people are not easily trusting these brands. There were real examples before when companies were producing popular products and quickly gaining market share in Azerbaijan, then these same companies were noticeably dropping the quality of their product." [F.G.]</p>	<p>"Even Tesla is an well known expensive electric car, however its is difficult to maintain them." [A.K.]</p> <p>"Some green goods are not so perfect as described and therefore cannot compete with ordinary one." [D.I.]</p> <p>"If it is not a good quality but made from recycle, I will not buy it. Even it is recycled it might have a negative effect. However, if the good is produced well, then it should match the quality." [D.I.]</p> <p>"I feel that the biggest concern for me here is that there is no trusted source of certification for green or eco-products." [B.O.]</p> <p>"The product that I mentioned -H&M- it is good." [D.S.]</p>	<p>"I can tell that the green product statement matches with the quality. I had no regret buying such products so far." [E.D.]</p> <p>"Both green and non-green goods, for example textile products, are the same in terms of quality. I haven't had any allergy or negative experience." [M.O.]</p> <p>"I know some green products which have better quality, some which are on the same level and many which are inferior" [L.Y.]</p> <p>"...when it comes to clothing for example, the products made from 100% organic materials have better quality and are significantly more durable" [I.Y.]</p>	<p>"There might be the case when green goods producers could hide behind the green production and economize on output by decreasing the overall quality of goods. As the price by decreasing production costs is more likely to decline, it increases the general competitiveness of green goods with more qualitative ordinary goods. As a result, reinforced by the eco-friendliness trend, people have to purchase inferior green goods instead of decent quality ordinary products." [T.N.]</p> <p>"... sometimes depending on the type of product, you may need to wait a little longer to observe the expected effect of a green product compared to the regular option due to the nature of their composition which may require more time to trigger the expected outcome" [L.Y.]</p>	<p>"...regulate green producers" [A.K.].</p> <p>"environmental standards need to be strengthened and better enforced" [M.T.].</p> <p>"Companies must show their interest and real investment into preservation of the nature and this may convince and influence people to follow their example and buy green products. Unfortunately, this is not happening right now in my country" [E.O.].</p>
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<p>2.3. <i>Availability of green goods and services</i></p>	<p>“They are available but in a limited amount” or [F.G.]: “there is shortage of supply of clean products on the market and people are not really seeing them so often on the shelves”. “...Mainly from cheap clothing which are made of recycled materials like polyethylene – we use them often at work from reused and recycled materials. But generally, very limited.” [A.Z.]</p>	<p>“Unfortunately only few shops sell green goods or services, I don’t know them” [D.I.]. “Honestly, there are not so many options, especially locally produced. Most of them are imported.” [M.K.] “Kazakhstan suffers from the lack of green labelling, especially national green labelling schemes, so there’s little choice of products with low environmental impact that can be trusted (not counting greenwashed products)” [M.T.].</p>	<p>“Compared with 5 years ago, now there are more options of the green products in the Turkish market, such as organic markets/bazaars, organik sections in the supermarkets (Migros), green textile sections and lines.” [M.O.] “Some cosmetics and some cleaning stuff like detergents assume that they are green. Nothing else I noticed as green product in my neighborhood. But in other places like Macrocenter and Metro, where the variety is vast, I can find some food products like flour, wheat, oatmeal, teas, coffee, that they also state they are green or organic.” [E.D.] “E-government is a good green service example in Turkey, because it reduces huge paper waste.” [O.K.] “...toothbrushes which are stated to be made of recyclable materials” [L.Y.]. “... I think we are really behind Europe in this regard. We don’t produce green products in the same quantity as Europe or the west in general” [I.Y.]. “I don’t think there is enough in terms of both quantity and variety” [E.Ö.].</p>	<p>“...the gap in terms of availability of such products in comparison to other developing and developed nations around the world is still perceivable and large. Our market cannot supply solar panels and electric cars to the extent that they are supplied, for instance, in European markets. The second issue is that these products are predominantly imported from abroad.” [T.N.] “Green goods are not available in all of the shops, mostly in a fancier shops like Migros” [L.Y.]. “In certain international districts of my city there are local stores, bazaars, in the places where foreigners tend to gather more, but unfortunately, green goods are not easily found in other places far from the very center of the cities” [I.Y.].</p>	<p>“Overall, I would say, we have the room for growth – to provide people an access to more recycled goods of any type ranging from pens to computers.” [T.N.]</p>
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<p>2.4. <i>Environmental concern</i></p>	<p>"I mean I am not really interested in the fact that a product may be green." [E.R.] "I don't really concern myself with thinking about the environment that much to be honest." [R.G.] "I never pay attention to this." [T.H.] "If less people will buy regular products which are damaging environment at any stage of their lifecycle, then factories and manufacturers will decrease their supply and it will improve the environment as less waste will be released into the air." [K.S.] "I think every person's impact is really minimal, almost negligible. It is up to the manufacturers and government to have significant impact. I believe it should all start on the governmental level. It is government's responsibility to change the way things are done to improve the situation." [R.G.]</p>	<p>"For example, the cars that we buy and use every day, is the main environment polluter." [M.K.] "I live in Almaty, the biggest city of the country and other Industrial cities and we have a great air pollution problem from burning coal to heat the houses." [A.K.] "Our daily consumption generates wastes needed to be recycled. In Kazakhstan, with poor recycling facilities, these wastes are thrown in local dumps causing a significant detrimental impact on the environment all over the country." [T.N.] "When we buy products from non-eco friendly companies, we directly support their methods." [B.O.] "our every day purchase habits affect the environment, because it increases global warming, air pollution, increase melting in Arctica, reduce population of the animals." [D.S.]</p>	<p>"Surely, annual garbage volume produced by people is enormous and it negatively affect the environment. Even daily consumption of coffee contributes to that. Starbucks for example, changed plastik tubes for paper one." [K.O.] "I have impact on the environment with my every action. I use electricity, water, heating, transportation, food, etc. That is a lot of energy spending... I am trying to reuse some stuff at home to reduce the amount of waste I produce." [E.D.] "Sure, I using ordinary petrol car, and wish to have electric car like Tesla to reduce carbon emission." [M.O.] I believe people are not really supporting these initiatives because it seems they are not interested that much in eco-products. [I.Y.] "People don't think about the outside world that much. They are very selfish during shopping and that is fine considering that Turkey economy is not in a very strong position right now" [E.O.].</p>	<p>"Lack of waste management system and underdeveloped local recycling industry" [B.O.] "Local population's old mindset and irresponsibility for future generation, and passive government participation makes it difficult to switch local consumer to green consumption" [K.O.] "Lack of factories and government support in rising green products awareness". [M.O.] "It seems that government is not that interested in green products and environment that much I think. Istanbul used to be more green, there were more trees and less buildings but nowadays there are so many buildings here and less and less green outside" [E.O.] "Even if before people in my country may have been slightly more concerned about the environment, nowadays that's not the case due to economic situation" [I.Y.]</p>	<p>Information on green product package should pinpoint the direct benefit of the green producer to be done to the preservation of the environment." [T.N.] "In the city it would be great to have public electric transportation." [M.K.] "In Europe all plastic bags are paid or you can use your own bag." [A.K.] "if we reduce usage of plastic we could save the planet. If we switch to eco cars or replace the burning coal while heating the houses, probably we will reduce the air pollution." [A.K.] "Mass media can easily reach out people and convince them to become responsible consumers and switch to green consumption." [K.O.] "Educational system must change to teach people be more future minded, think in the long-term perspective and thus become more responsible" [E.O.]. "Some educational cartoons or movies because people here like to watch movies, series [L.Y.].</p>
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2.5. Awareness, green marketing and labeling	<p>"...They are attracting my attention, I can easily notice them in the midst of all other products. They are placed separately, their coloring and design is a bit different that makes them stand out." [A.Z.]</p> <p>"From marketing perspective, I believe companies should focus on informing people about negative consequences of being irresponsible to the environment." [A.Z.]</p> <p>"...I haven't noticed anything particular. Maybe only the color is green, and cleanliness related. I think regular products have better design and overall packaging." [F.G.]</p>	<p>"The lack of creativity in advertising those goods undermines the huge potential of those goods to be bought by the customer given the overall trend for eco-friendliness." [T.N.]</p> <p>"Eco-friendly product always has a very clear information on their labels. Usually their packages are attractive." [D.S.]</p>	<p>"I almost always read labels. Provided information is not sufficient. Sometimes, it is very complicated to understand all ingredients. Also, I don't know anything about the product journey from those labels. I should be able to see all processes a product goes through." [E.D.]</p> <p>"Sometimes organic food producers write the origin of the product on the labels, but that's all. I don't find enough information on packages about the processes and materials used during the manufacturing, whether the Company produced them in sustainable way and supports the environment in general." [M.O.]</p> <p>"... Definitely the information is lacking. They should write more real data that proves their claims" [E.O.].</p>	<p>"... the willingness to read the green label depends on the education and financial stability of the consumer. If you want to know what are you paying for, you will read packages carefully." [M.O.]</p> <p>"Green products here are known as hippie stuff even though it is not, so when people use it, they think that it is only for rich people who don't worry about money, they have a steady income" [L.Y.].</p> <p>"...people don't go to the market and check the ingredients in great detail, they just read the package a little and buy what is more affordable. It is all due to economic situation" [L.Y.].</p> <p>"Local firms tend to choose the easiest way to make a product and don't care if it is eco-friendly or not" [L.Y.].</p>	<p>"Government, NGO, celebrities should do propaganda awareness campaigns." [D.I.]</p> <p>"Put them everywhere. Make them visible." [E.D.]</p> <p>"Visual advertisements is a good way to attract people's attention to green goods, especially specifying the harmfulness for the future generation" [K.O.]</p> <p>"...more advertising like for example guerilla marketing. Using unconventional techniques and strategies to maybe indirectly push people to be more interested in green products" [A.Z.].</p> <p>"The companies must be very clear, sincere and transparent with their customers and that may make people trust them and purchase. Also the companies must make marketing more engaging and entertaining." [E.O.].</p>
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6. Discussion

6.1. Green Awareness

The general level of awareness of green products in the three countries is low. Majority of people who are aware of green products and green market in general are educated with high level of income and have experience living abroad with relatively higher levels of environmental concern. Therefore, the demand for green goods is not high.

6.2. Green Product Availability

There is limited availability and variety of green products across Azerbaijan and Kazakhstan. Most of the available green products are imported from abroad. Domestic green products are available but in small quantities and people are often not aware of their existence. However, Turkey as a leading textile and agriculture producer provide a relatively wide range of locally produced green goods (organic food and green textile as an example) in the market. Moreover, it should be noted that green and eco-friendly goods were stated to be available mostly in higher quality stores and markets as well as mostly closer to the centers of major cities with higher concentration of foreign population and international visitors.

6.3. Green Product Price

Green products are priced higher compared to regular products. However, current prices are unreasonably high. People cannot afford to buy them on a regular basis which affects their purchase intention. Majority is not willing to pay extra for a green product. People are able to consider paying extra 5-10% on average if the product offers higher quality as ordinary products. Overall, majority of respondents across the three countries agreed that green products can be priced slightly higher due to additional costs and limitations associated with their manufacturing and production process – this shows that some consumers are willing to pay premium prices for environment friendly products. Respondents from Turkey were more upset with the high price of green goods as these products were stated to be sometimes 4 to 5 times more expensive compared to regular offerings. Moreover, none of the respondents was able to find any justification for the significant price difference and considered it to be highly unreasonable.

6.4. Green Product Quality

Similarities between Azerbaijan, Kazakhstan and Turkey are that consumers were split in their views on the quality of green products. Half of respondents were satisfied with the quality based on their previous experience, but half were not. High product quality may contribute to increased client acceptability as well as retailer and wholesaler satisfaction. As a result, their intention to buy green goods or services decreased as the quality is the precise characteristic that influences the demand and consumption of eco-friendly products. Based on the responses from Turkish sample, it can be implied that population of Turkey is relatively more skeptical when it comes to believing the authenticity of the green products they observe on the shelves during shopping. Majority of respondents indicated that don't easily trust the statements of companies regarding the quality of their green offering and require higher degree of factual prove and evidence to make a decision to purchase a green option.

6.5. Environmental Concern

All respondents in Kazakhstan agreed with the fact that their daily consumption habits impact local environment and might be a factor but not priority in purchasing green goods, however overall population across the three countries is not concerned about environmental issues. All the respondents, no matter the age, gender or level of education or income stated not to think about environment when doing regular shopping activities. Around 50% of the respondents in Azerbaijan understood the correlation between buying a green product and preserving the environment while 50% failed to understand the cause and effect between

these two concepts. The main reason for this split is that the level of education of people regarding environmental preservation and ecological problems is very low in Azerbaijan. People are not exposed to the notions of environmental responsibility, sustainable development and green consumerism. Unless they deliberately searched for this information online due to the nature of their work or education, other respondents failed to understand the correlation between green purchase behavior and environmental preservation. Moreover, supposedly due to collectivistic nature of society prevalent in Azerbaijan and Turkey as in many other Asian countries, people don't seem to put much weight and responsibility into their own individual actions. For that reason, most respondents stated that government is ultimately responsible for enforcing green consumerism and environmentally friendly intention and as a result behavior among population.

6.6. Green Marketing and Branding

All respondents across the three countries agreed that there is a lack of advertisement of green goods on the local market, especially TV and social media advertisement is lacking. Majority of them do not know how to distinguish trusted and certified labels from greenwashed ones. At the same time, already existing advertisements are not transparent, not clear that proves the greenwashing problem. Majority of respondents mentioned that there is nothing special or distinct about the packaging of green products and hence, they don't notice them until they read the description. There is lack of the information about sustainability of the manufacturing process on the packages. Aside from product features and the authenticity of green product claims, consumers expressed environmental concerns depending on the information offered about products' benefits. However, majority stated to have other important priorities, they don't want to waste time reading description to find whether a product is green or not.

6.7. Challenges and Recommendations

Azerbaijan and Kazakhstan share similar **challenges** in developing and popularizing green product consumption which might be valuable for government bodies to consider in their green economy policies. Moreover, these challenges can represent opportunities and threats for local and foreign green companies to adapt their green marketing policies to introduce and popularize their green goods and services in these markets. The challenges are as follows:

1. Unreasonably high prices of the green goods and services; low average level of income in the country, poverty and poor economy;
2. Lack of verified and certified green goods and services, that prove their human safety and eco-origin and quality standard;

3. Lack of awareness, promotion and advertisement of green goods and services; presence of greenwashing issue and lack of knowledge of distinguishing credible labels from greenwashed;

4. Lack of environmental concern among the population;

5. Lack of government's interest and support of green goods and services;

6. Lack of waste management system and underdeveloped local recycling industry in local markets;

7. Insufficient local production capabilities and unavailability of green products.

Based on the study the following **recommendations** for both government and green companies were proposed to attract customers to switch to green goods purchase:

1. Reduce the price of green goods. Government could propose green programs on subsidizing or tax exempt of local green producers; attract more foreign or institutional investments on green projects; regulate the price gap between brown and green products and services; restrictions and regulations on manufacturers are needed.

2. Firms and producing factories (especially in Turkey) could organize educational advertisements about the production processes of their offered goods and services, sustainable materials used and their contribution to the environment.

3. Raise awareness about environmental concerns and green goods targeting all ages and all levels (public and private) by using school programs, digital technologies, celebrities and social media; trends should be set because public tends to follow them.

4. Organize campaign, advertisement and develop creative marketing for green goods, improve their design; more advertisement with focus on negative consequences to environment, including detailed information about sustainable ingredients and way of production, certificates. Set up the strict control and regulation on certifications to eliminate greenwashing.

5. Ensure high quality of the green goods by supporting with certificates and keep the trust of the customers.

6. Develop local production of the recycled goods by developing local waste management system and recycling industry, renewable energy production.

7. Strengthen and enforce the environmental standards.

7. Conclusion (12 pt.)

Through a broad literature review, various elements influencing customer green purchasing intention towards green goods and services were recognized. As revealed by most research, product price, product quality, product availability, awareness, advertisement and promotion and environmental concern were considered the major positive drivers of green purchasing intention. All these variables were found to either encourage or discourage the purchasing of eco-friendly items.

Based on the results of the study, it is found that there are many similarities between Azerbaijan and Kazakhstan which might be explained by the similarity in the cultural and economic conditions of the countries. Both countries share similar factors such as high green product prices, green product quality and lack of availability, low level of green product awareness, limited advertisement and promotion and environmental concerns that all influence the green purchase intentions of consumers.

Moreover, similar challenges were determined, which are lack of government support, advertisement, concern and awareness among the population. As a result of the study, general recommendations have been identified for government bodies and green companies of Azerbaijan and Kazakhstan, such as the need for governmental intervention, the need for raising awareness of the general population, the need for strong and effective advertisement and promotion, need for the development of waste management system and recycling industry.

The findings might increase the potential of the trade in the green goods segment in the markets of Azerbaijan and Kazakhstan based on analyzed factors affecting purchasing intention of consumers towards green products in both countries.

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CHAPTER 2

PUBLIC DEBT: GLOBAL TRENDS, GROWTH TREND, RISKS, PROSPECTS AND AZERBAIJAN'S PUBLIC DEBT MANAGEMENT EXPERIENCE

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ABSTRACT

Analyzing the threats, prospects and advantages for the economy caused by the internal and external debt of the state is very relevant in the modern era. In recent years, state borrowing has penetrated the economies of all countries as an actual economic trend. Due to the significant contraction in the world economy in the context of the COVID-19 pandemic, the relevance of public debt and its share in the gross domestic product (GDP) of countries has increased at an alarming level. Expansionary fiscal policies due to fiscal deficits have led to a sharp increase in public debt levels around the world.

Along with the increase in the interest rate of public debt in GDP, the number of reasons that create public debt is also increasing worldwide. The issue that attracts attention is that rich and poor countries suffer from public debt.

Modern public debt has become more of a political mechanism than an economic process. Nuances such as the fact that foreign debts have reached an unmanageable level in many countries and the inability of some countries to pay debts have increased both the number of researchers and the number of applications to this topic by individual financial institutions. All such nuances make the topic even more relevant and make it necessary to analyze the current picture of public debt in the world from a different perspective, to examine the seriousness of the high risks and threats that debt can create.

Taking into account the above, the following goals were set and analyzed in the research work:

- ✓ At the global level, the macroeconomic advantages of public debt, its efficiency and the risks created were analyzed, comparisons were made based on the databases and statistical data of international organizations, and the positive and negative effects of the relationship between public debt and GDP were considered.

- ✓ The growth trend of public debt in the last 100 years was reviewed and growth dynamics and different effects on economies were investigated.

- ✓ The borrowing strategy and specific characteristics of developed countries, developing countries and countries rich in natural resources were analyzed comparatively.

- ✓ The current state of Azerbaijan's public debt has been analyzed.

- ✓ The economic problems and perspectives that the current level of Azerbaijan's public debt may create have been examined.

- ✓ The weaknesses and strengths of Azerbaijan's public debt management strategy have been analyzed.

The research paper consists of two parts, covering research on the world and Azerbaijan related to public debt.

Keywords: GDP, Economic Growth, Public Debt, Foreign Debt, Domestic Debt

1. Introduction

In economic theory, there are several accepted ways to attract financial resources to meet the needs of the state. The most important and widely used are money emissions, use of the budget surplus of the previous period, revision of tax rates and public borrowing. Each of these can be applied depending on the country's macroeconomics, mainly financial situation and existing conditions. As a result, money emission leads to inflation and raising tax rates increases the tax burden and lowers economic growth. The budget surplus rarely occurs and does not meet the demand at the required level. Public borrowing is considered the financing method most used by the world's countries in recent years, which ensures flexible support of the state's financial needs.

Public debt is the unpaid obligations of the state that are required for the future period. According to the Law of the Republic of Azerbaijan «On State Debt», the state debt is the debt that must be paid on behalf of the contracts and obligations concluded on behalf of the Republic of Azerbaijan (*Law «On State Debt» of May 22, 2007*). Public debt can play a positive role in stimulating economic growth, production, and employment for the long term and the development of the economy at the desired level if it is managed correctly, according to its purpose, efficiently and effectively. Also, public debt has a positive effect on the development of the securities market and plays an important role in the expansion of economic relations with developed countries, in the development of state finances, money circulation, and the investment environment, and in the establishment of cooperative relations with prestigious international organizations. In short, debt is an efficient source of financial security for countries. However, dependence on debt and its use for unproductive purposes pose a threat to economic growth, macroeconomic stability, and progress.

Factors that lead countries to borrow: continuous increase in state liabilities, inefficient use of economic resources, the improper establishment of the administrative management mechanism (incompetent, unprofessional management, corruption and other cases), natural disasters, international economic shocks, threats, etc. we can mention other cases like this.

2. Public Debt: As An Economical Category and Theoretical Approaches to it

The negative and positive aspects of public debt have always been a topic of discussion and economists have different views on this. The famous economist CM Keynes, while emphasizing the importance of public debt, explained that public debt is one of the main ways of treating economic recession (*Edmund Phelps, 2022*). He believed that public debt was an

important fiscal measure that saved the economy from recession by stimulating economic growth. S. Leland and others, who were followers of J. Keynes, developed the «cyclical» theory and suggested financing the budget deficit and unpaid creditors of the state from the budget surplus.

David Ricardo, a great economist, believed that debt is a terrible evil and they created this evil to oppress people (*Daniel Friedrich Koch, 2012, p. 15*). Adam Smith also had this opinion and considered the state's debt economically ineffective and an additional burden on the state (*Sugözü, 2010*).

Nobel laureate Paul Samuelson believed that debt is a financial mechanism that seriously damages the economy and negatively affects long-term economic growth (*Samuelson, 1976*).

According to Robert Barrow, public debt is a sensitive financial instrument. The effects of debt on economic growth can vary depending on its optimal level (*El Mostafa Bentour, 2018*).

Despite the differences of opinion among economists regarding public debt, it has become one of the main tools of the financial system in the modern era. Some scientists suggest limiting state debt at the constitutional level, considering the importance of state debt and the risks it may create.

Currently, the debt level and policy of the world's countries have entered the actual phase as one of the main fiscal policy goals. Debt sustainability, as a more relevant form of fiscal sustainability, is widely used in research due to the increase in the demand for borrowing in the last 30 years (*Zaur Valiyev, 2020, p. 231*). Debt stability is one of the most important elements of macroeconomic stability as the most important component of fiscal stability. The government debt management mechanism is implemented precisely to ensure debt sustainability. Debt sustainability assesses the long-term impact of the country's internal and external borrowing on the country's economy. Debt instability usually occurs when the rate at which the government services that debt is lower than the growth rate of the debt itself.

As a rule, the main factors that determine the violation of debt sustainability include the following:

- ✓ Continuous increase in public debt servicing costs;
- ✓ Decrease in trust in government securities, increase in interest rates;
- ✓ The occurrence of delays in servicing the public debt.

One of the interesting aspects of the concept of public debt is related to loans provided with state guarantees. These credit relations, which are part of the state's debt policy, differ

from other public debt relations. Since the state is not the user of the loan amount transferred with the state guarantee, it is not the responsibility of the state to return it.

According to the reason for creation, we can divide public debts into two groups.

1. Targeted state debts;
2. State debts without purpose.

The essence of targeted public debts is that these debts arise from the obligations undertaken by the government on purpose. So, the state, like every economic entity, can face a shortage of free funds under one or another condition.

In contrast, state debts with no purpose act as a set of pre-planned, that is unexpected debt obligations. Non-purpose public debt does not have advantages in terms of any characteristics. The cause of these debts is directly related to other problems of the state (*Aghanemat Aghayev, 2006, p. 37*) because it is precisely those problems or gaps that create unnecessary debts.

Due to the programmatic nature of targeted public debts, their management begins with creating debt obligations. Of course, at this time, the state determines the amount of the obligation itself, as well as the periods for the stages of the debt relationship are known in advance.

A large part of the public debt is directed to financing investment projects. When financing investment projects through public debt, foreign loans are the most widely used source of finance. The government either receives the funds provided by foreign creditors on its own behalf and transfers them to the user, or acts as a guarantor and guarantees foreign loans directed in this direction.

Commercial banks of foreign countries have a large share in financing investment projects. Currently, commercial banks of foreign countries that are politically, economically, and economically close to the borrowing state play a key role. For example, the participation of any large commercial bank of Turkey in financing investment projects in Azerbaijan and Near European countries is realistic. However, the appropriate activity of the mentioned bank in South American countries or other distant regions cannot be considered appropriate and realistic.

Loans for investment purposes are selected due to their higher productivity in the composition of public debt. Because, in contrast to consumer loans directed to certain areas, these loans ultimately play an important role in economic development by leading to an increase in the production of goods and services in the country.

Funds raised as public debt are widely used to balance payments. A country's balance of payments may have a deficit at different times and for different reasons. To eliminate this deficit, credit funds are attracted from many sources, which are characterized as state debt obligations. As a rule, loans drawn to balance the balance of payments are characterized as foreign government debts, as they benefit from foreign sources. There are several advantages of borrowing funds for the purpose of balancing the balance of payments, which arise from the necessity arising from its nature. Thus, although the mentioned loans confront the state with debt obligations, they are of great importance from the point of view of macroeconomic policy.

One of the main activities of the debt policy is the correct use of borrowed funds through efficient distribution. This distribution should positively affect the main directions of socio-economic development.

Scientific justification and correct implementation of public debt policy, like other forms of economic policy, will lead to great positive results in terms of public interests. Strengthening the state, general economic growth and, finally, improving the people's standard of living act as the macroeconomic policy's main goal, including the state's debt policy (*Aghanemat Aghayev, 2002, pp. 69, 124*).

The main goal of the state's debt policy should be to find more profitable financial sources and increase the efficiency of using debt funds. When determining the state's debt policy, it is also necessary to take into account specific historical conditions. Concrete historical conditions mean the unique characteristics of the development stage of the society, as well as the characteristics of the international situation and the economic and financial capabilities of the state.

A different aspect of public debt is that as the economic conditions change, the use of the debt also changes. For example, one of the directions in which public debt has been widely used in recent years is related to financing military expenses. Another reason is the emergence of the need to ensure the implementation of new policy initiatives during the re-election of political leaders.

Currently, one of the important tasks facing the world's countries regarding debt is its optimal management and the establishment of a related strategy. Even in favorable macroeconomic conditions, public debt management requires a special approach. Sometimes countries tend to pursue pro-cyclical policies during periods of economic stability. Decisions about debt, especially foreign debt, should always be approached sensitively. Debt sustainability is

important for the stability of the domestic capital market and for maintaining the country's reputation among investors simultaneously. The goal of the process of creating and implementing a public debt management strategy is to raise the necessary amount of finance at the lowest possible level and to target the debt according to the risk level of the government.

In economic theory, the basic principles for public debt management are mainly considered to be:

- Correctly determining the government's debt requirements;
- Borrowing at the lowest possible cost in the medium and long term;
- To maintain a prudent level of risk in the debt portfolio;
- Creating efficient market conditions for securities (*World Bank and IMF Debt, 2001*).

Optimal management of public debt is a complex process resulting from interdependence and mutuality. Here means carefully considering the interests of the borrower, the lender, and third-party debt users.

Managing foreign public debt, which constitutes a large part of public debt, requires a special approach. The risks for foreign public debt are greater. The most important issue in managing foreign debts is determining the debt burden that can be managed, keeping debt balances (debts taken in previous years) under control and determining accurate borrowing methods.

Sources of foreign debts, distribution by sectors, the debt burden of a specific sector, efficient use of foreign debts, risk assessment and compatibility of foreign debt balance with other macroeconomic indicators play an important role in debt management. Foreign debt management is a part of the general financial policy, and its compatibility with the balance of payments, monetary and credit system, and foreign exchange reserves should be constantly monitored. Forecasting changes in foreign debt stock with long-term economic growth scenarios should be carried out continuously. The government should accurately assess the risks in this area (*Fuad Ganbarov, 2011, p. 85*).

One important indicator of public debt is finding its optimal level. In connection with this research work, the optimal level of public debt calculated based on econometric models for many countries was considered. The results show that the optimal level of public debt affects countries differently. Although the optimal level of the interest ratio of public debt to GDP positively affects economic growth to a certain extent, its higher level begins to harm eco-

conomic growth. Excessive indebtedness harms economic growth and increases the country's financial obligations.

For example, Pakistan's external debt is 26.4% of its GDP, which is considered above the optimal level. (Minhaj-ud-Din et al., 2021. 1002). In another study, the optimal level of public debt for Pakistan for 1976-2020 was calculated based on the Autoregressive Distributed Lag (ARDL) model. The result shows that when the interest ratio of public debt to GDP is above 60 percent, it harms economic growth (*Muhammad Ashfaq, Ihtsham Ul Haq Padda, 2019, p. 231*).

The calculated results for Turkey show that the optimal level of the effective effects of public debt on economic growth varies between 34.3% and 38.7% (*Gokay Canberk Bulus, 2020, p. 81*).

The optimal level of public debt for Nigeria is 49.4 percent. Higher levels harm economic growth (*Babatunde S. et al., 2016, p. 21*).

3. Global Debt Situation: Risks and Prospects

In the world, in the conditions of globalization, the international transformation of industry, agriculture, technological development and the level of indebtedness is also increasing rapidly. This is considered dangerous for some countries. According to the latest data from the International Monetary Fund (IMF), the countries with the most public debt as a percentage of GDP in 2022: Japan's \$9.087 trillion, Greece's \$379 billion, Portugal's \$264 billion, Italy's \$2.48 trillion, the United States is \$19.23 trillion (24). The public debt of the People's Republic of China is currently 54.4% of the GDP, which is 12.9% higher than in 2014.

The Center for Strategic and International Studies (CSIS) reported that the CIS's indebtedness level had reached a dangerous level (*CSIS, 2022*). The study notes that one of the main reasons for borrowing to reach this level is the COVID-19 pandemic and its consequences. As a result, the debt tsunami has already reached a dangerous level that could be the basis for the next financial crisis.

In the «International Debt Statistics 2022» bulletin of the World Bank, it is noted that in 2020, the GDP of the countries of the world decreased by 4.3% and reached the most critical level since the «Great Depression». This has greatly increased the debt burden of the countries. In particular, the public debt of low- and middle-income countries increased by an average of 5.3% in 2020. The ratio of foreign debt of low- and middle-income countries to GDP increased to 29% in 2020.

In 2021, a report containing a list of 72 debt-vulnerable countries was published within the framework of the UN Development Program. The report shows these countries risk defaulting on US\$ 598 billion by 2025.

In recent years, the share of public debt has increased from 72% to 105% of GDP for developing countries (LDCs), 35% to 54% for developing countries (LDCs), and 14% for low-income, underdeveloped countries. Increased from 44%.

It is also noted in the bulletins of the IMF that the share of the public debt in the GDP of the CEEs and CEEs has increased rapidly in the last 50 years and changed as follows:

- from 50% to 90% for the years 1970-1989;
- from 90% to 100% in 1990-2000;
- from 100% to 110% for the years 2001-2009;
- It increased from 110% to 170% in 2010-2019.

Experts believe that the actual progress of such borrowing and the uncertain management of public debt has led to a rapid increase in countries' debt burden.

In addition, there are certain deficiencies in the accuracy of data on the statistics and destination of the states' borrowing. For example, 50 percent of loans issued by the People's Republic of China are not recorded in international debt statistics. The People's Republic of China has become the world's leading country regarding the level of credit provided to the SOEs to meet their infrastructure needs within the Belt and Road Initiative framework. However, there is no accurate information on which of these loans are given to state institutions and which to private firms (*World Bank, 2022*). Let's note that since 2000, the People's Republic of China has surpassed the IMF and the World Bank as the country that lends the most money to the EEC.

The analysis shows that public debt has a different effect on the economic development of IEEs and IEEs. Thus, while borrowing brings a new market, technology transfer and economic efficiency to CEEs, it leads to international dependence and a debt-interest spiral. As a result, external debt crises in CEEs (*Shakira Mustapha & Annalisa Prizzon, 2015*). One of the advantages of the SOEs is that the debt service costs provided for in the state budget are satisfactory. Currently, SOEs use an average of 3.5 percent of their income to pay their debt interest.

Several reasons why public debt has reached a dangerous level are explained in the EEOs. The most important of these is the low level of debt service costs and risk assessment.

Some countries with high public debt, such as Japan, are not too worried about this critical level of debt. Because the level of public debt management in Japan is quite satisfactory, and the financial resources involved are mainly directed to the production sphere, resulting in high economic efficiency. Most of Japan's public debt is domestic, which shows that much depends on the destination of public debt and the level of governance.

In general, the level of debt should be directly proportional to economic growth. According to economic theory, the fact that the money supply (money printing, funds attracted from foreign markets) is not directly proportional to economic growth leads to an increase in inflation.

In addition to the EEC and the EEC, countries rich in natural resources have slightly different debt policies and strategies. In resource-rich countries, fiscal and monetary policy decisions are made mainly depending on the country's import potential. Most economists suggest that resource wealth harms the development of countries and hinders development and that these «damned» resources are a fundamental obstacle in revealing the development potential of countries themselves (*Hasanli Y. et al., 2019, p. 440*). Let's look at the development history of the countries. We can see that the natural resource factor is the basis of the current development of many countries (for example, Germany, Norway, the Republic of South Africa, etc.). The main issue is not the natural resource factor but developing the economy by using these resources efficiently, forming a competitive economic strategy due to new technological opportunities. In most resource countries, the purpose of attracting public debt is to target the balance of payments and exchange rate risks. In recent times, the financial crisis caused by the pandemic in the world and which continues today, the fluctuation of oil prices have lowered the credit rating of most resource countries.

4. The Current Situation of the State Debt in Azerbaijan

Azerbaijan's public debt, prospects, risks, weaknesses and strengths are examined by experts and related studies are conducted. The legislative base is regularly improved in this direction by the relevant state institutions and the compliance of the state debt with legal acts and budget parameters, including the budget rule, is assessed.

In the current circumstances, we consider it appropriate to answer the following questions to assess the state of Azerbaijan's state, especially foreign state debt:

- Is the current level of public debt a cause for concern?
- What are the state's borrowing opportunities in the coming periods?

- Can interest payments on public debts be considered satisfactory?
- What threats and risks have public debt created to economic development in recent years?

First, consider the current level of public debt and the associated concerns and risks. In 2014, due to the sharp drop in the price of oil in the world markets, many problems arose in the financial system of Azerbaijan, as in many resource countries that export oil and natural gas. This problem has had its effect on public debt, especially foreign public debt, in the form of exchange rate risk. However, Azerbaijan's government targeted the debt crisis by reacting quickly to the problem and taking preventive measures. In this direction, as a basic measure, «Strategic Roadmaps for the main sectors of the national economy and the economy» on the implementation of the Law of the Republic of Azerbaijan «On the State Budget of the Republic of Azerbaijan for 2017» related to the management of public debt» of the President of the Republic of Azerbaijan dated 27th of 2016 Under Decree No. 1180 dated December 2018, we can mention the preparation of the «Strategy for the management of public debt in the Republic of Azerbaijan for the medium and long term» (*Strategy, 2018*). In the strategy, several strategic goals were put forward based on managing public debt, targeting foreign debt in GDP and forecast indicators. The strategy is to further strengthen the country's financial stability against the background of the processes taking place in the global economy and financial markets, to increase the efficiency of public borrowing, to improve effective risk management and control mechanisms in this area, taking into account the new challenges and opportunities ahead, as well as to provide the financial needs of the state with the least cost designed for this purpose.

To assess the risk level of Azerbaijan's foreign debt, let's first consider the actual and forecast indicators of the debt (Table 1).

Table 1 <i>The Amount of Foreign Public Debt (for 2018-2022)</i>					
Years _	2018	2019	2020	2021	2022
Amount of foreign public debt - forecast (billion US dollars)	9.7	10.1	9.8	9.2	8.5
Amount of foreign public debt – actual (billion US dollars)	8.9	8.9	9.0	8.9	7.9 (as of 01.07.22)
<i>Source: Ministry of Finance (http://www.maliyye.gov.az), compiled by the author using information from the «Medium and Long-Term Strategy on State Debt Management in the Republic of Azerbaijan».</i>					

As can be seen from the table, the actual indicators of the state's external debt obligations for 2018-2022 are less than the forecast indicators (respectively by year: 800 million, 1.2 billion, 800 million, 300 million, 600 million US dollars). Based on this 5-year positive indicator, it can be predicted that by 2025, the interest ratio of Azerbaijan's foreign debt to GDP will be lower than the 20% targeted in the strategy.

Based on the sensitivity indicators methodology of the IMF, it is considered appropriate that the interest ratio of the domestic public debt to GDP should be 20-30%, and the foreign debt should be 30-50%.

According to the information of the Ministry of Finance as of July 1, 2022, the total public debt of Azerbaijan is 16,928.5 million manats (14.7% of GDP), including foreign public debt of 7,882.3 million US dollars (11.7% of GDP %), and the internal state debt amounted to 3,528.5 million manats (3% of GDP). As of July 1, 2022, part of the foreign public debt in the amount of 7,167.1 million US dollars or 10.6 percent of GDP is directly foreign public debt, part in the amount of 715.2 million US dollars (1.1% of GDP) organized conditional obligations on the state guarantee given to foreign debts (*Ministry of Finance of the Republic of Azerbaijan, 2022*).

Depending on the level of development of the countries, risk assessment is one of the main points in the management of public debt. Debt burden indicators market risks during risk assessment; refinancing risk; market liquidity; classified as financial sensitivity to external shocks. Each of these risks can be evaluated for Azerbaijan. However, as a country whose economy depends on the natural resource factor, market risks (especially exchange rate risk) are considered more relevant for Azerbaijan (*Vugar Ibrahimov, 2021, p. 83*). When assessing the state of Azerbaijan's public debt, specific aspects of the country's economic and financial management should be considered. Refinancing risk reflects the debt portfolio's exposure to the refinancing debt's high-interest rates. If interest rates rise, the debt will be refinanced at a higher rate and more interest will be paid in the future. When the risk is too high, the debt manager cannot change the term commitment. Market liquidity risk is the ability to buy and sell government securities or stocks without significant changes in market prices. The risk of financial sensitivity to external shocks. Sensitivity analysis requires the creation of indicators that prevent and measure any situation that would hinder debt payments under current conditions. Exchange rate risk is always relevant for Azerbaijan. Although today the world market prices of oil have increased twice compared to the beginning of the year. However, these high oil prices should always be considered volatile and risky.

The state's borrowing capacity can be considered satisfactory in the coming periods. The basis for this is that Azerbaijan promptly fulfills its obligations to international organizations, the reliability level of the state guarantee, and the satisfaction of the service costs provided for the state debt in the state budget every year. The assessment of the international rating organizations also suggests this (although the debt problem of the International Bank of Azerbaijan has negatively impacted the country's international financial image). «Standard & Poor's» assesses the credit rating of Azerbaijan at the level of «BB+». Moody's last assessed the credit rating of Azerbaijan at the level of «BA1» with a stable forecast. «Fitch» last evaluated the credit rating of Azerbaijan at the level of «BB+» with a stable forecast and considered the current state of Azerbaijan's public debt to GDP ratio to be satisfactory (*Trading Economics, 2022*).

One of the main problems with borrowing is the exchange rate and interest rate risk, which are covered in the strategy. An increase in interest rate risk, in turn, raises the risk of refinancing. In this regard, it is considered more appropriate for resource countries to borrow in low-coupon foreign currencies, and it is cheaper than domestic borrowing. Risky debt structures are often created due to inappropriate, misjudged fiscal, monetary and institutional economic policies.

Interest payments on public debt are very important regarding their impact on the level of debt burden and exchange rate risk. It is important to attract the acquired foreign debt on cheap, preferential and more profitable terms. Low-interest loans can attract the interest of a larger number of economic entities. According to the 2022 semi-annual report of the Ministry of Finance, 45.2 percent of the foreign state debt of the state budget must be paid to creditors for up to 10 years, 49.0 percent for 10-20 years, and 5.8 percent for more than 20 years. New debt obligations on foreign public debt are charged at the relevant reference rate plus 0.65 percent for a period of up to 10 years, at the relevant reference rate for 10-20 years plus 0.8 percent, and for more than 20 years at the relevant reference rate plus 0. It is attracted at the rate of 9 percent.

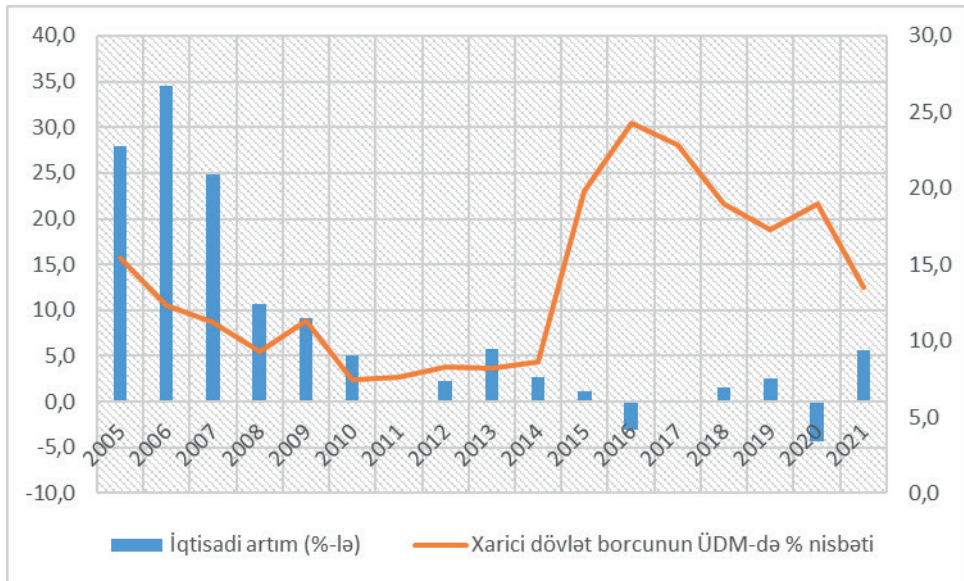
In the report review of the Ministry of Finance, it is noted that newly attracted debt obligations on foreign public debt are subject to the relevant reference rate plus 0.65 percent for a period of up to 10 years, the corresponding reference rate for 10-20 years plus 0.8 percent, more than 20 years and the relevant reference rate plus 0.9 percent is involved for the term.

In most of the resource countries that export oil and natural gas, the GDP and economic growth are subject to changes depending on the world market prices of oil. Based on relevant

statistical indicators, let's consider the effects of price shocks on Azerbaijan's foreign debt. The volume of GDP in Azerbaijan for 2005-2021, foreign public debt, its ratio to GDP and economic growth indicators were used as a database (Table-2).

Years	GDP in Azerbaijan (million USD)	Economic growth (in %)	Percentage of foreign public debt in GDP	External debt of the state (million US dollars)
2005	13238.7	27.9	15.4	2 042.8
2006	20983.0	34.5	12.3	2 586.0
2007	33050.3	24.9	11.2	3700.0
2008	48852.5	10.7	9.3	4 314.5
2009	44297.0	9.2	11.3	4 864.9
2010	52909.3	5.1	7.4	3857.3
2011	65951.6	0.1	7.6	4816.7
2012	69683.9	2.2	8.3	5708.4
2013	74164.4	5.8	8.2	6093.8
2014	75234.7	2.7	8.6	6478.2
2015	52996.8	1.1	19.8	6894.3
2016	37862.8	-3.1	24.3	9529.6
2017	40867.9	0.2	22.8	9398.3
2018	47112.9	1.5	19.0	8927.1
2019	48174.2	2.5	17.3	8320.0
2020	42693.0	-4.3	19.0	8100.4
2021	54622.2	5.6	13.5	7393.4
Source: It was compiled by the author using statistical data from the State Statistics Committee, the World Bank, the Central Bank, and the Ministry of Finance.				

According to the table, the average indicator of the ratio of foreign public debt to GDP for 2005-2021 was 13.8%. The highest level of the ratio of foreign public debt to GDP in the last 17 years was observed in 2016 at 24.3% and in 2017 at 22.8%. This happened due to the macro-fiscal threats caused by devaluation, the sharp drop in world market prices of oil, and the state budget's dependence on oil was high (in 2014-2015, the state budget's dependence on the oil sector was 73-74%). If there is a decline in the oil sector in countries whose economy is dependent on the sale of oil and natural gas, this will automatically harm the non-oil sector. Because the state's investment opportunities in the non-oil sector (subsidies, subsidies, other support packages) are limited, for information, let's note that in 2014, the number of funds collected for the Oil Fund was 37 billion US dollars, while in 2016, this indicator decreased to 33 billion US dollars.



Comparison of foreign public debt and economic growth (Chart 1)

Chart 1 shows the trend of economic growth and changes in foreign public debt, typical for most countries rich in natural resources. GDP growth and economic growth in countries whose economies depend on oil and natural gas export are mainly linked to oil prices. The need for foreign borrowing decreases because of high foreign currency inflows to the country when the world market prices of oil are high. According to the graph, in 2015-2020, the lowest economic growth was observed when the foreign state debt was high.

5. Conclusion

Investigations and analyses conducted within the framework of the research work lead to the following conclusions:

- Borrowing, considered by the majority of classical economists as a negative element, has become the main tool of modern economic development and financing mechanisms of countries.
- At the global level, the high or low percentage ratio of public debt to GDP is not the main reason for the risks and threats caused by debt. Debt affects economic growth depending on the strategies and management tools countries use.
- Although public debt is one of the main ways to stimulate economic growth, its stress level threatens macroeconomic stability.

- Depending on the economic management mechanisms of countries, the effects of the interest rate of public debt on GDP on economic growth are different.
- The fact that the actual indicators of the ratio of foreign public debt to GDP in Azerbaijan are lower than the forecast indicators suggests that foreign debt will not threaten the economy, at least soon.
- Considering Azerbaijan's public debt management strategy, as well as fulfilling its obligations to international organizations and states in full, on time and by contractual terms, we can consider Azerbaijan's borrowing situation satisfactory in the coming years.

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CHAPTER 3

DIGITAL TRACEABILITY IN RENEWABLE ENERGY: A BLOCKCHAIN USE CASE

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ABSTRACT

The countries that are party to the Paris Agreement of 2015 announced their national contributions for the short and long term to achieve the temperature target of 1.5°C set by the agreement. In the Glasgow Climate Pact signed at the end of the 26th Conference of the Parties of the United Nations Framework Convention on Climate Change, which was held in Scotland in 2021, it was stated that to achieve the 1.5°C temperature target in the Paris Agreement, global carbon dioxide emissions should be reduced by 45% by 2030 compared to 2010, in addition to achieving the net zero emission target by the middle of the century. The countries party to the Glasgow Climate Convention are invited to implement policies that support the development, use, and spread of technologies facilitating the transition to a low-emission energy system to realize the emission reduction targets. Having revealed a need for innovative and alternative models in the energy field, these climate change policy targets make it mandatory to rapidly increase the share of renewable energy technologies in the energy ecosystem.

Apart from the targets announced nationally, many global businesses are inclined today to commit themselves to meet their energy consumption from renewable energy sources. Renewable energy certificates are one of the methods businesses use to meet their demand for renewable energy. Blockchain technology, presented as an emerging option with a digital traceability aspect, is a recent addition to the existing renewable energy supply solutions available, thanks to its transparent structure that can provide peer-to-peer services. The competitive nature of the current business world, which is unsurprisingly shaped mainly by technological development and change, places renewable energy supply methods and related alternative solutions based on blockchain technology on the agenda of the companies that seek not to lag in the fierce competition.

This study examines alternative solutions developed by leading global companies in renewable energy, especially the use of blockchain within digital traceability. In that respect transition to a 24/7 approach in renewable energy and efforts of global companies towards realizing the goal of 24/7 renewable energy are discussed. Accordingly, the use of new software featuring blockchain technology by an energy sector company in Turkey has been examined, accompanied by an evaluation of the contribution made by this application to the green economy in terms of a 24/7 renewable energy approach. As a result, it is thought that this innovative solution for the energy sector will play an accelerating role in the companies achieving their carbon neutrality targets.

Keywords: Renewable Energy, Energy Attribute Certificate, Blockchain

Jel Classification: O20, Q55, Q56

1. Introduction

With the population and economic growth in the world, the need for energy understandably increases. A large part of the current energy demand is met by fossil fuels such as oil, coal, natural gas, and nuclear power plants, which have considerably great negative effects on the natural environment and human health both in the short and long term. In addition to environmental destruction, greenhouse gas emissions stemming from production processes and consumption lead to global warming and climate change, which are only exacerbated by the use of fossil fuels. Although depicted by some as a solution, nuclear power remains problematic due to the long-term nuclear waste problem. As a result, carbon-free renewable energy sources and clean energy technologies have gradually become more and more significant. Human-induced greenhouse gas emissions need to be reduced rapidly as an obvious solution for climate change.

Investing in renewables is indispensable in ensuring energy security, offering access to affordable electricity, and creating new business areas. The adaptation process must be managed internationally through commitments, agreements, and regulations and applied globally and nationally. The realization of the transition of the energy market needs to be supported with plans, policies, and actions with common sense. Unfortunately, the current statistics shared by authorities have fallen far short of the targets. Thus, there is a need to move the efforts one step forward to achieve sustainable results. Carbon-free targeting with the 7/24 approach is encouraging. Led by global companies, pilot projects are underway, assisted by state-of-the-art technologies. This study focuses on such projects developed by global companies in a 7/24 approach with an hourly real-time matching solution. It is accomplished in a use case examined with the same approach, which displays the current situation and the potential future contributions to electricity transition.

This study primarily explains actions taken globally with international treaties to avoid climate change. The main Commitments through actions result in numbers put forward. Fundamental terms about climate change and renewable energy, including carbon-free, carbon neutral, 24/7 carbon-free approach, and renewable energy attribute certificates, are explained. The following section discusses initiatives and technologies to reach the carbon-free targets presented. The latest developments and the design of the processes that lie behind these improvements offered by global companies are researched. To realize the carbon-free target, efforts in Information Technologies for converging the renewable energy supply and demand 24/7 told. The output of these efforts as platforms and products developed are researched,

which have the potential to lead to new business models for the renewable energy market in the future.

The final section discusses a blockchain-based renewable energy solution developed in Turkey.

2. Climate Change

To achieve the temperature target of 1.5°C accepted in the Paris Agreement signed in 2015, the countries that are party to the agreement state their national contributions for the short and long term (UNFCCC, 2015). This agreement is the first step in addressing climate change and its effects on humans, ecosystems, and economies worldwide. The main objective of this agreement is to limit global warming to well below 2 °C for pre-industrial levels and pursue efforts to limit it to 1.5°C by the end of the century. While some obstacles will still need to be overcome to achieve such goals, the Paris Climate Agreement sends a strong signal to the world that the international community intends to do its part to reduce global emissions and limit the effects of climate change.

Finally, the 26th United Nations (UN) Climate Change Conference of the Parties was held in 2021 and defined as COP26. Glasgow Climate Pact was signed at the end of the 26th Meeting of the parties to the UN Framework Agreement on Climate Change held in Scotland. It was stated that to achieve the 1.5°C temperature target in the Paris Agreement; global carbon dioxide emissions should be reduced by 45% by 2030 compared to 2010. The net zero emission target has to be achieved by the middle of the century (Ukcop26, 2021). It was important with the way that all countries agreed and finalized outstanding elements of the Paris Agreement, so COP26 is known as the most important COP since Paris. These commitments represent a significant milestone in the fight to reduce climate change. Within the period of COP26 and the time that followed, more countries committed themselves to reaching net zero emissions. According to the IEA's 2022 World Energy Outlook, 83 countries and the European Union had set net zero emissions targets (IEA, 2022). G7 Countries also pledged to ensure that by 2035 their power sectors will have been completely or largely decarbonized.

The International Energy Agency's (IEA) World Energy Outlook as of September 2022 presented three different scenarios and projection results. The Stated Policies Scenario (STEPS) is the first scenario shaped by today's policy settings. The second one is The Announced Pledges Scenario (APS) which assumes the governments' all ambitious objectives are met timely and fully. The third one is The Net Zero Emissions by 2050 Scenario, which projects a method to achieve a 1.5°C stabilization by the rise in global average temperatures,

besides ensuring global access to modern energy by 2030. According to the IEA, renewables will become a dominant source of electricity worldwide in the long term. The global share of renewables in electricity is estimated to be 29% by 2021, with generation rose to 8000 TWH, by 500TWH increase in the last year (IEA, 2022). By 2030 renewable share will increase 43% in the STEPS scenario, while this upward trend is 35% higher compared to STEPS in the APS scenario.

The Nationally Determined Contributors Synthesis Report, announced just before COP27, summarizes

national climate plans submitted by countries. The report emphasizes that the countries' pledges are far behind in keeping climate change at 1.5°C (UNFCCC, 2022).

All these climate change policy targets, which make it mandatory to rapidly increase the share of renewable energy technologies in the energy ecosystem, reveal that there will be a need for innovative and alternative models in the energy field.

Carbon neutrality is balancing greenhouse gas emissions by offsetting or removing an equivalent

amount of carbon emission from the atmosphere. But carbon neutrality doesn't shorten how much carbon is released into the atmosphere, and the term net-zero requires a reduction in greenhouse gas which differs from carbon neutrality. Target net zero also requires considering indirect carbon emissions when calculating the overall greenhouse gas emissions (Upsite Technologies, 2021).

An independent group of scientists formed the Climate Crisis Advisory Group initiative to advise on climate change and biodiversity (The Independent, 2021). They released their third report, The Final Warning Bell, in June 2021 (Jackson, 2021). In this report, they claimed that global governments are at a critical stage. They also emphasized that the current net zero targets will not be sufficient and that it is not adequate to prevent a widespread climate disaster from happening (Climate Crisis Advisory Group, 2022). A scientific report released on August 2021 by the Intergovernmental Panel on Climate Change (IPCC) formed under the UN highlights that the period leading from the current decade to 2030 will play a vital role in tackling climate change (UN, 2021). It forecasts that if no further action is taken to improve our terms of policy, finance and behavior, net zero targets assessed earlier in the Paris Climate Accord are less likely to be achieved. So, another step forward in aiming net zero emissions is taken with the 24/7 Movement.

The 24/7 Energy Compact is an outcome of the “High Level of Dialogue on Energy” summit organized by the UN, which was held in September 2021. The aim is to reach more affordable, reliable, sustainable, modern energy for everyone, which the UN declared as the 7th goal of the Sustainable Development Goals of 17 in the 2030 Agenda for Sustainable Development (UN, 2022a). The main target of the Compact is to accelerate the decarbonization of the world’s electricity systems to slow down climate change while providing better access to clean and low-cost electricity to all (UN, 2022b). The term 24/7 carbon-free energy refers to matching each kilowatt hour of electricity consumption to supplied by carbon-free electricity sources at every hour of the day worldwide. The 24/7 compact aims to accelerate the change to carbon-free energy systems by working on high-impact technologies, practices, and solutions (Gocarbonfree247, 2021). Unlike carbon neutral, being carbon-free means directly reducing emissions to zero. The 24/7 carbon-free energy program aims to shift electricity production to renewable energy sources like wind, solar, and hydro(C40, 2022).

3. Renewable Energy Market

Energy production has always been a major contributor to carbon emissions globally. Over the past century, mankind developed ways to generate electricity using various sources. However, renewable energy sources are the only way to generate electricity that does not produce emissions. In line with the 24/7 approach today, many global companies are committing themselves to 100% renewable energy consumption. To fulfill these commitments, the need for tracking renewable energy remains essential. Energy Attribute Certificates (EACs) are used for tracking renewable energy production. EACs are instruments with different names, including certificates, tags, credits, or generator declarations (Bischoff & Ditze Energy, 2022). The main purpose of these certificates is to record and trace renewable energy sources through processes of production, distribution and trade to consumption. EACs enable companies to contribute to the growth of clean energy globally. Each EACs corresponds to 1 megawatt-hour of renewable electricity.

In today’s physical electricity market, when electricity is generated, it enters the grid without consideration of whether the source is renewable or nonrenewable. It is impossible to track renewable electrons from production to consumption (Natural Capital Partners, 2022). EACs, therefore, do not represent the electricity generated but instead their environmental features. Companies and businesses purchase EACs to prove their use of renewable electricity to fulfill their environmental pledges, which can be either mandatory or voluntary. EACs can be classified according to their origin, geographical location, time, and usage scope. Today there are several types of EACs used for tracking renewable energy. Guarantees of Origin (GOs)

in Europe, Renewable Energy Certificates (RECs) in North America, Renewable Energy Guarantees of Origin (REGOs) in the United Kingdom and The International REC Standard (I-REC) along with Tradable Instruments for Global

Renewables (TIGRs) across the globe can be defined as the most known EACs. (Climate Impact Partners, 2022). According to the European Union directives 2009/28/EC and 2001/77/EC, members are requested to apply a certification system ensuring the origin of the renewable electric resources used, called GOs. These certificates are widely used throughout the EU28 countries, Switzerland, and Norway. In 2015, 35% of the production of renewable energies in these countries was certified successfully using this certification (Hulshof, Jepma & Mulder, 2019).

Using renewable energy avoids carbon emissions; unlike fossil energy, renewable energy sources are limitless. This advantage makes renewable energy sources to be the preferred choice for the increasing energy demands of businesses. According to the International Renewable Energy Agency (IRENA), the World Energy Transitions Outlook 2021 declared that by 2050, 90% of total electricity needs would be supplied by renewables (IRENA, 2022). However, renewable energy has some challenges regarding how it is provided for consumers today. The production capacity of fossil-based energy sources can be adjusted according to the fluctuations in demand for energy. On the other hand, the energy supply from renewable sources is not flexible enough to match the changing demands at various times.

Understanding how the current energy system works as a combined system is also essential. Energy is used from various sources and collected from various sources of production sites. The electricity generated by these production sites is fed simultaneously into the energy grid and then delivered to consumers to power the businesses and for everyday use. The energy demand is met with the supply around the clock. But when the supply from renewable energy sites is not adequate for the rising demand, the energy gap can be dealt with the energy from other energy sources like fossil fuels. Businesses that pledge renewable electricity usage need to identify their usage source of energy. At that point, they buy EACs. However, these certificates do not exactly represent the given hour of the day. They show production and consumption over longer periods. The current flow doesn't support businesses matching their consumption hourly from the supply of renewable sources. The inability of hourly match renewable energy plays a critical role as an obstacle to developing renewable energy projects. Therefore, global companies and businesses are working to develop a solution that reflects matching closely and on-time supply and demand.

Vattenfall, a Swedish state-owned energy company currently operating in multiple nations across Europe and one of Europe's biggest producers and retailers of electricity, has started a partnership with Microsoft, a global American software company, to create a first-of-its-kind solution to match the generation of renewable energy more closely with demand in a system that performs 24/7 matching of GOs to energy demand. Smart grid meters are installed in various locations on the energy delivery network. These smart grid meters are constantly calculating and measuring data about the energy produced from various sources such as wind, solar and hydro and collecting and delivering hourly. Consumption is also measured again using the smart grid meters at the locations where the energy is used, called the point of delivery. All the data collected, in terms of produced and consumed, are matched hourly and GOs are canceled based on the result of matching. By matching the consumption to the production of renewable energy hourly, the trends and fluctuations in total consumption become more visible. As a result, energy providers, distributors, and retailers can take necessary further steps. From a business perspective, companies can track whether they can fulfill their 100% renewable energy commitments hourly. 24/7 hourly matching system drives true market demand for renewable energy sources and participants of the system can inspire regulators to change how the GOs are created, acquired, and retired. The system is being developed on Microsoft's Azure Internet of Things (IoT) Central to deliver the 24/7 GO Matching Solution. The piloting of the system is live at Vattenfall's Solna headquarters, which is the new home of Microsoft Sweden in downtown Stockholm (Vattenfall, 2020).

Google, which is a multinational technology company, declares awareness of energy usage in the company's data centers. The company declared in 2007 they reached their carbon neutral targets, including previous years. By purchasing renewable energy, this target was met (Koningstein, 2021). Also, since 2017 the company has matched 100% of global electricity usage by purchasing wind and solar-type renewables, thus reducing emissions. In 2020 the future sustainability goal was explained by Sundar Pichai, CEO of Google (Pichai, 2020). With the white paper, "24/7 by 2030: Realizing a Carbon-free Future," Google aims to operate 24/7 carbon-free. In the white paper detail, approaches explained to reach the 24/7 carbon-free target (Google, 2020).

As part of Google's 24/7 carbon-free by 2030 target, a solution at the Midwestern US and Denmark data center was piloted named Time-based Energy Attribute Certificates (T-EACs) (Texier, 2021). T-EACs are used as clean energy matching hourly, offering digital tracing of how and where the electricity is produced. Thus, hourly-based tracking enables companies to buy T-EACs per hour. For the Midwestern data center, with the electricity purchased per

hour, a renewable energy certificate is bought and retired in return. For the solution, Google partners with M-RETS, which offers an M-Rets Tracking Platform for tracking and validating energy attribute certificates (M-RETS, 2021).

Parallel to the US data center in Denmark, Google cooperates with the Danish grid operator, Energinet. Via Energinet's Project Origin Platform, hourly transactions of GOs are simulated. With the T-EACs, Google aims to standardize the certificates and adapt them to the existing tracking systems and carbon-free programs. Also, there is a crucial role for the grid operators to help consumers to reach and make sense of the hourly data consumed. For further efforts, Google supports Energytag, a voluntary initiative led by a group of industry participants working on a global tracking standard for T-EACs. Google intends to develop a maturity level of tracing all supply from production sites via TEACs in Europe. Thus, to reach the state known as full disclosure.

4. A Blockchain Use Case

4.1. Project

With this project, customers' energy consumption is matched with renewable energy production sources 24/7 and hourly by using blockchain technology infrastructure. Today in the physical electricity market, it is impossible to distinguish the energy source once it is delivered to the grid. While renewable energy demand is increasing exponentially, consumers are looking for ways to transparently prove the origin of the energy they consume. Consumers want to purchase green energy locally and match their consumption in real time. This project enables consumers to receive this digitally traceable service from their energy retailer. In this project, the Energy Company cooperated with Energy Web Foundation, which aims to help the global economies through their carbon-free commitments by developing open-source, decentralized systems (Energy Web, 2021). The Foundation offers a multi-layer infrastructure based on blockchain technology called Energy Web Chain (EWC), which the project developed in. The Energy Company became a validator of EWC, the world's only specialized network in the energy industry.

Using Energy Attribute Certificates like RECs and GOs, consumers can choose the energy source and claim the use of that energy generation unit. However, EACs do not offer real-time matching for green energy production and consumption. This project enables consumers to trace and verify the origin of their renewable energy hourly. It has an accelerating role in the green energy ecosystem for the customers to reach companies' carbon-neutral pledges.

4.2. Method

EWC offers a stack of open-source, decentralized operating systems and tools. Members of the Energy Web

A community can build its applications using the Energy Web stack. These tools are built on the Energy Web Chain as the blockchain infrastructure. The developed platform is integrated with EWC as a blockchain infrastructure. With the platform developed, every matching transaction is recorded and verified on EWC, so it is immutable and transparent. EWC uses the Proof of Authority (PoA) consensus algorithm, a reputation-based algorithm especially used in private blockchain networks (Binance Academy, 2018). In the PoA algorithm, blocks and transactions are verified by the preauthorized trusted participants. In that case, the participants are the EWC validator nodes, including the Energy Company. Each transaction made is verified by the PoA consensus mechanism and then written to the chain.

The platform is designed to offer main and unique features. First of all, with the help of blockchain infrastructure, since all transactions are recorded to EWC, this brings transparency and traceability to the process. Another distinct feature provided is with the coordinate base mapping; consumers can choose the energy source from local renewable energy production sites. Eventually, due to the renewable energy source differentiation within a parametric infrastructure, source types can be chosen like wind, solar, hydro etc.

The product was initially piloted for the company's internal consumption. The project aims to determine the 24/7 hourly matching for the company's internal electricity consumption through the platform. Four of the company's consumption sites, including the headquarter, are matched with renewable energy. After successful demonstrations, the Energy Company started offering our customers the service.

The green energy matching is written to the EWC blockchain, and all EWC members can trace the matching transactions. The platform has an interface where all customers can trace their matched consumption data.

Since the platform offers real-time green energy production and consumption matching, some of the meters were not technically adequate for real-time measurement. Thus, such traditional meters were excluded. For further action, replacing these meters with digital hourly reading meters is aimed.

4.3. Results

Since the matching mechanisms work on the blockchain platform, it provides customers with transparent, immutable, secure transactions. This project brings a layer of transparency to

decarbonization commitments. While consumers can match their consumption with renewable energy sources, they were encouraged to set higher sustainability goals. Consumers can trace and verify the origin of their renewable energy, and the platform enables consumers to purchase renewable energy from local green energy producers. Also another distinctive advantage of the platform is that customers can choose the type of green energy, such as wind, solar, etc., they wish to consume. The matching success was approximately 70% for production to meet consumption.

Consumers with sustainability goals had problems proving the origin of their energy, and consumers needed to have third parties for consultations. This project enabled customers to get sustainability as a service with their electricity. The project offers a more transparent, digitally traceable, and green energy-matching solution so that customers will have more awareness while planning their energy consumption strategy. Other industry companies externally affected by this project may reach their customers with similar projects or may want to join this system. In addition, certification issuers may want to be a stakeholder in this project.

The project evolved with sustainable entrepreneurship awareness. The company develops future products and processes with economic and non-economic gains to companies, the economy and society with the technology. The revenue generated can be described as creating value for a sustainable future for everyone.

5. Conclusion

There are many institutions, some owned by the public, some established with the private sector's initiative without any financial benefits, voluntary-based organizations and communities trying to save the future for all. The main goal is fighting climate change since we have no other planet to live on. The main agenda is to set a barrier to greenhouse gas emissions with the different methods explained in terms of carbon-neutral, carbon zero and carbon-free. It is for sure renewable energy plays the forefront role in the transition of the electricity industry to reach both carbon neutral, net zero and carbon-free energy targets. Today's physical renewable energy market processes through the consumption offered by RECs like I-REC, GOs etc. EACs can be considered an initial step for encouraging to use of renewable energy so companies can declare 100% green. Companies continue to generate fossil fuel-based energy. This situation emerges because some challenges exist in the energy market. First, managing renewable energy production according to consumption when needed is impossible. Secondly, there is no current way to track renewable energy from production to consumption once electrons are given in the grid. To overcome these constraints, global companies are working

on developments of new renewable energy procurement ways that operate on an hourly basis which is in line with their 24/7 carbon-free energy commitments.

With the help of new technologies, global companies have attempted to improve solutions with specifications of 24/7 digital traceability, sustainability, and good public usability to overcome these doubts. New technologies development like IoT, Blockchain-based solutions are up and coming. Vattenfall's project with Microsoft's IoT technology-based matching solution and Google's T-EACs, carbon intelligent computing, both efforts are valuable for a 24/7 carbon-free future. The Use Case examined offers a transparent, trusted and traceable product with the contribution of blockchain's nature. The platform developed provides a solution for consumers to reach their carbon-neutral targets. Both projects are valuable for the way they offer an alternative renewable electricity distribution model in an hourly, real-time base 7/24 solution. The projects offer economic and social gains for companies, society, and industries.

Still, more areas of development need to be figured out to reach a 24/7 carbon-free target.

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CHAPTER 4

ENERGY CONSUMPTION AND ECONOMIC GROWTH*

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ABSTRACT

Energy trade is among the most important determinants of the current account balance around the world. Türkiye as a developing country with relatively low level of energy sources and with reasonably high growth rates, is dependent on energy imports. Unlike the previous decades, high dependency on energy is not a critical matter for only current account balance but also for the sustainability of the environment and greenness of the economy. Since most of the energy imports originate from non-renewable sources and the domestic investments tend to utilize renewable ones, for a given economic growth level in Türkiye, the reduction of energy imports and sustainability of the environment are complementary. In this study, we first point to the positive relationship between economic growth and overall energy consumption in Türkiye. Next, we provide descriptive statistics suggesting that this relationship has been weakening in recent periods. More concretely, the energy intensity indicator that is calculated through dividing Türkiye's energy consumption by its real GDP has been declining over years. Finally, we explore the same relationship for a high number of countries using data from World Bank and British Petroleum (BP) databases; and look at the relative change in the energy intensity of economic growths across the world. We conclude that there is even more room for improvement in this dimension for Türkiye which may eventually lead to a better current account balance and a more sustainable environment in the future.

Keywords: energy consumption, economic growth, renewables, energy saving, energy imports

* The views expressed in this working paper are those of the author(s) and do not necessarily represent the official views of the Central Bank of the Republic of Türkiye.

1. Introduction and Literature Review

Household production and consumption habits can be influenced by changing living conditions and emerging external issues. One of the most severe external problems in recent times is global warming, which has a significant and harmful impact on the climate and our lives. The consequences of climate change include increasing temperatures, severe storms, more frequent droughts, food shortages, poverty, health risks, and the extinction of some species. The primary cause of climate change and global warming is the increase in greenhouse gas (GHG) emissions in the atmosphere. (UN, 2023).

In recent decades, the world has been working to reduce the harmful impact of increasing GHG emissions. To lead the way, the United Nations (UN) and other organizations have taken measures to prevent GHG emissions. The UN hosts global forums on climate change, including the Conference of Parties (COP), the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP), and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA). While COP is the main conference, CMP and CMA are focused on the parties to the Kyoto Protocol and the Paris Agreement, respectively (UN, 2023). The Kyoto Protocol was a landmark agreement in which countries were encouraged to limit their GHG emissions. It was drafted in 1997, but didn't become legally binding until February 16, 2005. Currently, 192 parties have signed on. The Protocol applies only to developed countries, which were expected to adopt policies and measures to reduce emissions and report on their progress periodically (European Commission, 2023; UN, 2023). The Paris Agreement is a binding agreement on climate change that was signed by 196 countries during COP-21 in Paris on December 12, 2015. Its implementation began at the end of 2016, and it aims to keep the average temperature no more than 2°C above pre-industrial levels. The treaty also monitors efforts to maintain an average temperature of 1.5°C above pre-industrial levels. The Paris Agreement is a critical agreement that unites all nations around the world in the fight against climate change. As part of this agreement, countries have begun preparing a set of mandatory actions called Nationally Determined Contributions (NDCs) to help achieve their goals and share experiences in reducing GHG emissions. Along with the NDCs, the Paris Agreement recommends that countries also develop long-term low GHG emission development strategies (UN, 2023).

Another important issue that leads countries to reduce the negative impacts of climate change is the green economy and its derivatives such as green growth. The term green economy was first mentioned in Pearce et al. (1989) as Blueprint for a green economy

for the UK's Department for the Environment (Georgeson et al., 2017). International organizations usually agree on the definition of terms like “green economy” and “green growth”. The UN defines a green economy as being “low carbon, resource efficient, and socially inclusive”. This means that economic activities, infrastructure, and assets that reduce emissions and pollution, increase energy and resource efficiency, and protect biodiversity and ecosystems can create employment and income. This definition was provided by United Nations Environment Programme (UNEP) in 2023. The UN's definition prioritizes the reduction of carbon emissions, efficient resource management, and socially inclusive development. These issues address many of the significant challenges humanity has faced in recent decades. The World Bank's definition of green growth centers on natural resource utilization efficiency, minimizing pollution and environmental impacts, and acknowledging the role of natural capital in preventing disasters (World Bank, 2023). While the definition does not mention carbon emissions by name, it implies their negative impact on global warming. The Organization for Economic Cooperation and Development's (OECD) definition of green growth emphasizes economic growth and development. Green growth, as defined by the OECD, aims to promote economic growth and development while ensuring that natural resources and environmental services are not disrupted (OECD, 2023). Despite some variations in definitions, international organizations generally share the same approach. This has led to the creation of the Green Growth Knowledge Platform (GGKP), a partnership between researchers and development experts that seeks to bridge the knowledge gap on green growth theory and practice (World Bank, 2012). To comply with the Kyoto Protocol and the Paris Agreement, the UN is committed to increasing the frequency of clean economic activities, infrastructure, and skills to achieve greener growth patterns in countries. To achieve its definition, the green economy needs to align with other sustainable development goals proposed by the UN. Green growth involves more than just implementing clean technologies in the economic sector; it also encompasses improvements in human health, advancements in social equity, protection of the environment, and reduction in ecological scarcities (ten Brink et al., 2012). Therefore, it is important for green growth and sustainable development goals to work in tandem. As stated in the United Nations Development Programme, the progress made towards any of the 17 sustainable development goals has an impact on the outcomes of the others.

International institutions are crucial in promoting the use of green technologies and reducing the negative effects of climate change. However, developing countries may view investing in these technologies as expensive, which could hinder their research and development efforts in this area. Especially in low-income countries, high cost barriers may make

it difficult for them to catch up with other countries. Even though international agreements and protocols are in place to promote a green economy, it is important to recognize that not all countries have equal access to these technologies. The UN urges developed countries to assist developing countries in adopting modern means of production and allowing their products to be sold on the global market. This is due to concerns that developing nations may not keep pace with the latest advances in eco-friendly technologies (UN, 2023). International organizations also issue reports on green economic progress and provide recommendations for developing and low-income nations. These reports can serve as a roadmap for implementing such technologies (OECD, 2012). Furthermore, global warming and climate change issues are addressed at G20 and G8 meetings, enabling countries to share their experiences with climate change policies.

Countries that are developed and those that are still developing have varying views on how to combat the negative effects of GHG emissions. Despite efforts to transition to cleaner energy technologies, developed countries with high levels of consumption are responsible for most of the GHG emissions. On the other hand, developing countries that still use traditional and more harmful technologies to the environment are hesitant to change their ways because they fear it may affect their possible future consumption patterns. To address the issue of high emissions from both groups, developed countries can try to alter their consumption habits while developing nations can invest in more eco-friendly technologies (Adaman, et al., 2011).

Furthermore, developing countries are falling behind in the adoption of green technologies, which is also crucial to combat poverty. To meet the growing demands for energy, developing economies require a diversified and productive economic structure. If this energy is not obtained from clean sources, it could lead to an increase in GHG emissions, resulting in environmental problems. Therefore, developing countries need to chart a unique path to achieve their growth targets while maintaining a high level of consumption. However, the adoption of green technologies in these countries cannot occur naturally or due to profit and efficiency incentives. The pursuit of profit and efficiency often leads to the development and deployment of technologies that have negative consequences. It is therefore important for the government to intervene in this process, and for international institutions to make an effort to develop technologies that are sustainable and environmentally friendly. The impact of climate change and the depletion of natural resources is expected to be greater in developing countries, as they are more dependent on these resources than developed nations. This was highlighted in a report by the OECD in 2012.

Energy use is a highly debated topic when it comes to green growth. Academic literature often focuses on the relationship between energy consumption and economic growth, with

conflicting viewpoints on the direction of this relationship throughout history. Some researchers argue that energy is a crucial input for production processes, while others claim that its role in economic growth is limited. Various studies examining the relationship between energy consumption and economic size have yielded different results due to differences in countries examined, types of energy sources, periods studied, and econometric methodologies used.

One early study, Kraft & Kraft (1978), which looked at data from the United States between 1947 and 1974, found a unidirectional relationship from economic size to energy consumption, sparking discussion in this area. Akarca & Long (1980) found no causal relationship between two indicators that had been previously studied by Kraft & Kraft (1978). Erol & Yu (1987) found a different structure of relationships between these indicators. For England and France, no causal relationship was found between economic size and energy consumption. For West Germany and Italy, a unidirectional relationship running from economic size to energy consumption was found. For Canada, a unidirectional relationship running from energy consumption to economic size was found. For Japan, a bidirectional relationship was found between the two indicators.

In other studies, the observed relationship depends on the source of energy. Aqeel & Butt (2001) explore the relationship between energy consumption and economic growth in Pakistan using Granger Causality methods. Their main findings indicate that economic growth causes energy consumption as a whole. They find also a causal effect from economic growth to petroleum consumption. For the case of electricity, the study finds a one-way relationship from electricity consumption to economic growth. They conclude that policies that aim to reduce petroleum consumption does not necessarily lead a reduction in economic growth. Jumbe (2004) analyse the relationship between electricity consumption and GDP in the case of Malawi for the years 1970-1999. The author finds that there is bidirectional relationship between electricity consumption and GDP implying that these two are jointly determined. Chang et al. (2017) found no causal relationship between coal consumption and economic growth for BRICS countries as a whole. Analyzing the data from the countries separately, only in the case of China they find causality from coal consumption to economic growth; and in the case of India they detect a bidirectional relationship between coal consumption and economic growth. Overall, they infer that for most countries analyzed in the study, policies that aim to reduce fossil-fuel resources, specifically coal, are not expected to have a detrimental impact on economic growth. Liddle et al. (2023) analyzed the correlation between energy consumption/electricity usage and GDP using a data panel that included OECD countries. The study found that the GDP elasticity of electricity consumption has decreased due to the saturation of energy services electrification in these countries.

Altınay & Karagöl (2004) analysed the connection between energy consumption and economic growth in Türkiye using the Hsiao's Granger causality method for the period of 1950-2000. The results showed no causal relationship between the two indicators. Soytaş & Sarı (2003) examined the same relationship in ten other emerging countries and found that energy consumption had a unidirectional causal relationship with GDP in Türkiye. In addition, Soytaş & Sarı (2004) used a generalized forecast error variance decomposition method to determine the extent to which energy consumption affected economic growth. They found that energy consumption accounted for 21 percent of the forecast error variance.

Recent studies have explored the link between renewable energy and CO₂ emissions. Gyimah et al (2022) used the mediation model and Granger test to investigate the impact of renewables on economic growth in Ghana between 1990 and 2015. They found that while renewable energy consumption had a direct effect on economic growth, the indirect effect was limited. Meanwhile, Salari et al. (2021) looked into the relationship between CO₂ emissions, energy consumption, and GDP growth in the United States from 1997 to 2016. Based on the results, it was observed that non-renewable energy consumption has a positive impact on CO₂ emissions, while renewable energy has the opposite effect. Additionally, the relationship between CO₂ emissions and economic growth is U-shaped. Initially, economic growth leads to an increase in CO₂ emissions, but after a certain threshold, the emissions start to decrease as the economy continues to grow.

This study analyzes the connection between economic growth and energy consumption, with a focus on Türkiye. To conduct this research, we utilized GDP data from 1965 to 2020, as well as energy consumption and import indicators from BP and the Ministry of Energy and Natural Resources of Türkiye (MENRoT). The goal of the study is to compare the correlation between economic growth and various energy consumption indicators over a long period of time, while also identifying any changes in recent years. Additionally, we collected data from the World Bank and BP to conduct a cross-country analysis, in order to determine Türkiye's relative position compared to developed countries and its peers.

Based on the study, there are three main implications to consider. First, in Türkiye, there is a strong and positive correlation between economic growth and energy usage, which is consistent with previous studies. Second, this connection has been gradually weakening in recent years compared to past periods. Last, when compared to other countries, there seems to be potential for Türkiye to improve in this area. This means that with optimal regulations, it is possible for Türkiye to achieve the same level of economic growth with even lower energy consumption than what is currently being used. This study contributes to the discussion on

green economy and growth through highlighting the weakening relationship and showing that there is room for improvement in the energy intensity of economic growth in Türkiye.

2. Data and Methodology

In this study, we utilized a wide range of data sets and sources to perform both descriptive and empirical analyses. To examine cross-country data, we relied on several data sets, including GDP data that displays the real GDP in local currency from 1965 to 2020. However, when analysing the correlation between electricity consumption and GDP, we shortened the data span by 20 years. This data was retrieved from the World Bank database. When examining GDP growth instead of its level, the relationship pattern remained consistent with the one observed for levels.

The BP Statistical Review of World Energy provides data on energy consumption and electricity usage in units of exajoules and TWh, respectively. This data covers the period from 1965 to 2020 for energy consumption and 1985 to 2020 for electricity consumption. Along with this, we utilize data on energy imports from the MENRoT source to illustrate the correlation between energy imports and GDP. This data is measured in thousands of tons of equivalent and covers the period from 1970.

For analyzing energy consumption and electricity consumption, we normalized the real GDP value in 1965 to 100 and the real GDP value in 1985 to respectively. The energy consumption and electricity consumption indicators, which were originally measured in Exajoule and TWh, were also normalized to their respective values in 1965 and 1985. Our analysis focused on the changing composition of energy sources in Türkiye.

3. Changing Composition of the Energy Sources of Türkiye

Based on the data in Figure 1, it appears that economic size and energy consumption have grown simultaneously throughout history. In the past, when energy consumption growth was negative, economic growth tended to be negative as well, except for 1989 when economic growth was close to zero. However, in recent years, there have been instances where economic growth and energy consumption growth do not show the same trend. For example, in 2013, 2018, and 2020, economic growth was achieved despite reduced energy consumption. Conversely, in 2009 positive energy consumption growth did not result in positive economic growth. In the last two decades, there have been indications of a weakening correlation between two economic variables. This could be attributed to the policies implemented in Türkiye for energy conservation and efficiency.

There are many measures being taken to improve energy efficiency across various sectors including industry, buildings, transportation, energy, and agriculture. The government has developed the National Energy Efficiency Action Plan (2017-2023) which consists of 55 actions in six sectors. This plan requires an investment of 10.9 billion US dollars and aims to save 23.9 million TEP of energy by 2023. In addition to financial support, there are also efforts to raise awareness about energy efficiency, provide training, and encourage both new and established firms to adopt more energy-efficient practices. Based on the 2023 progress report for this action plan, it was found that 5.2 million TEP energy savings were achieved between 2017 and 2022. This represents 21.8% of the energy savings goal outlined in the plan. The industry sector contributed the most to these savings, making up 43.9% of the total amount. The building and service sector came in second, with a share of 30.1% of the total energy savings for that period. The remaining energy savings were distributed among transportation, energy, agriculture, and other sectors, accounting for 20%, 3%, 2%, and 1%, respectively (MENRoT, 2023).

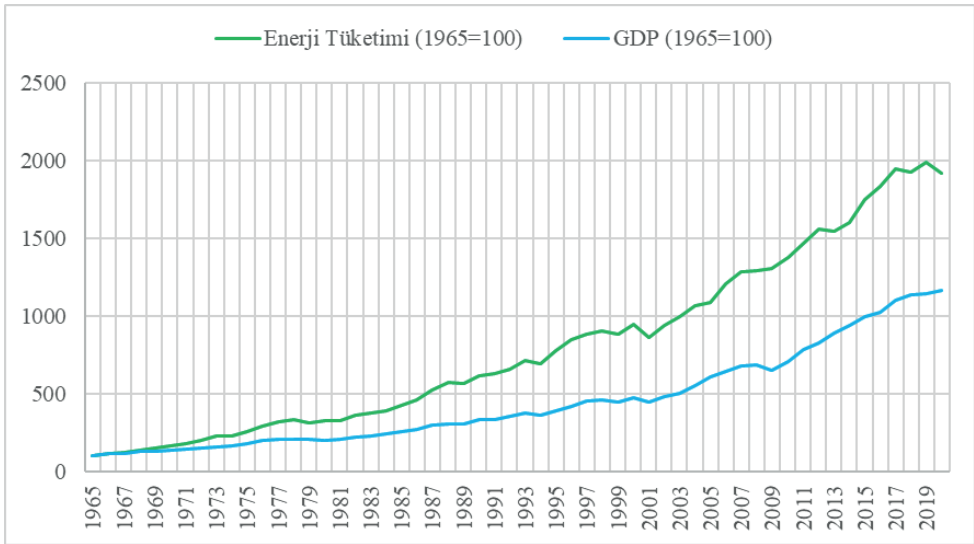


Figure 1. Türkiye's Real GDP and Energy Consumption (Exajoules) (1965-2020, 1965=100)
Source: BP and World Bank

In terms of energy consumption, Türkiye has begun to incorporate renewable energy sources for electricity generation. As a result, the percentage of renewables in the overall energy mix has increased (as shown in Figure 2). In contrast, the use of coal and oil for energy generation has significantly decreased (as shown in Figure 3). Over the past two decades, the share of renewable sources with low CO₂ emissions has risen while the share of lignite and

petroleum has fallen. However, the proportion of hard coal has increased due to a significant increase in imported hard coal. Meanwhile, local production of hard coal has remained stable. Between 2000 and 2020, the production of local hard coal decreased by 55%, while the amount of imported hard coal increased by 208%. This shift may negatively affect Türkiye's current account balance, but it could be considered environmentally-friendly because it may have replaced less efficient lignite sources that produce less energy for the same amount of carbon emissions.

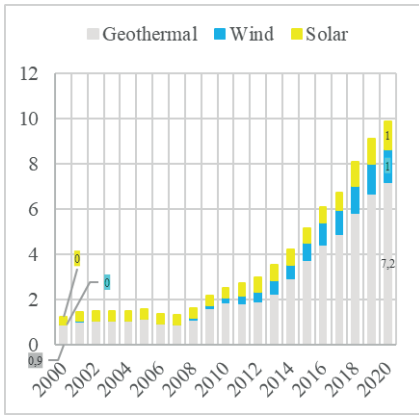


Figure 2. The Share of Renewable Energy Sources in Türkiye's Total Energy Mix (%)
Source: MENRoT

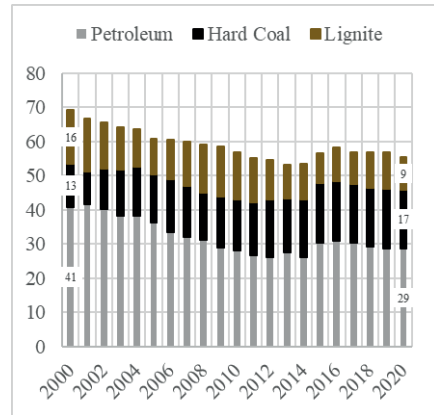


Figure 3. The Share of Non-Renewable Energy Sources in Türkiye's Total Energy Mix (%)
Source: MENRoT

Over the years, there has been a shift in the energy sector which is also reflected in the statistics of motor vehicles on the road. In 2004, 80% of the total road motor vehicles were fueled by gasoline and diesel, but by 2023, this number had dropped to 64%. On the other hand, the number of LPG-fueled vehicles has surpassed 5 million, with its share increasing from 15% to 34%. Additionally, there has been an increase in the share of hybrid and electric cars on the road. Prior to 2010, there were no hybrid or electric vehicles in Türkiye, but now they make up 1.2% and 0.2% of total vehicles respectively (Table 1).

4. Results

4.1. Türkiye's Energy Consumption and Economic Size

In this section, we will examine the correlation between Türkiye's economic size and energy consumption from 1965 to 2020. The Real GDP graph displays the normalized real GDP value as 100 in 1965. The energy imports graph indicates the normalized value of energy imports to 100 in 1965.

During this period, there is a correlation between a one-unit increase in the real GDP index and a 1.82-unit increase in energy consumption, as shown in Figure 4. However, when we

Table 1
Distribution of cars registered to the traffic according to fuel type, 2004 - 2023

	Numbers						Shares in Total (%)						
Year	Total	Gasoline	Diesel	LPG	Hybrid	Electric	Unknown	Gasoline	Diesel	LPG	Hybrid	Electric	Unknown
2004	5,400,440	4,062,486	252,629	793,081	-	-	292,244	75	5	15			5
2005	5,772,745	3,883,101	394,617	1,259,327	-	-	235,700	67	7	22			4
2006	6,140,992	3,838,598	583,794	1,522,790	-	-	195,810	63	10	25			3
2007	6,472,156	3,714,973	763,946	1,826,126	-	-	167,111	57	12	28			3
2008	6,796,624	3,531,763	947,727	2,214,661	-	-	102,473	52	14	33			2
2009	7,093,964	3,373,875	1,111,822	2,525,449	-	-	82,818	48	16	36			1
2010	7,544,862	3,191,964	1,381,631	2,900,034	-	-	71,233	42	18	38			1
2011	8,113,111	3,036,129	1,756,034	3,259,288	23	24	61,613	37	22	40	0	0	1
2012	8,648,875	2,929,216	2,101,206	3,569,143	53	175	49,082	34	24	41	0	0	1
2013	9,283,923	2,888,610	2,497,209	3,852,336	83	353	45,332	31	27	41	0	0	0
2014	9,857,915	2,855,078	2,882,885	4,076,730	113	412	42,697	29	29	41	0	0	0
2015	10,589,337	2,927,720	3,345,951	4,272,044	324	565	42,733	28	32	40	0	0	0
2016	11,317,998	3,031,744	3,803,772	4,439,631	517	643	41,691	27	34	39	0	0	0
2017	12,035,978	3,120,407	4,256,305	4,616,842	925	760	40,739	26	35	38	0	0	0
2018	12,398,190	3,089,626	4,568,665	4,695,717	4,415	952	38,815	25	37	38	0	0	0
2019	12,503,049	3,020,017	4,769,714	4,661,707	13,877	1,176	36,558	24	38	37	0	0	0
2020	13,099,041	3,201,894	5,014,356	4,810,018	33,690	2,797	36,286	24	38	37	0	0	0
2021	13,706,065	3,495,172	5,158,803	4,923,275	86,682	6,267	35,866	26	38	36	1	0	0
2022	14,269,352	3,817,104	5,261,876	5,005,563	134,662	14,552	35,595	27	37	35	1	0	0
2023*	14,802,645	4,140,684	5,368,105	5,045,313	180,299	32,777	35,467	28	36	34	1	0	0

Source: TurkStat, Road Motor Vehicles; The data of July, 2023. Hybrid cars includes both gasoline-electric and diesel-electric vehicles. Unknown includes the cars with false or missing information.

divide this period into two, the amount of energy consumption change per unit change in the real GDP index varies, as shown in Figure 5 and Figure 6. Between 1965-2000, the amount of energy consumption change per unit change in the real GDP index was 2.32 units, while between 2001-2020, it was 1.5 units.

Instead of relying on BP's energy consumption indicator, we utilized electricity consumption data calculated and provided by BP. The results remained consistent when using electricity consumption data, as demonstrated through Figures 7, 8, and 9.

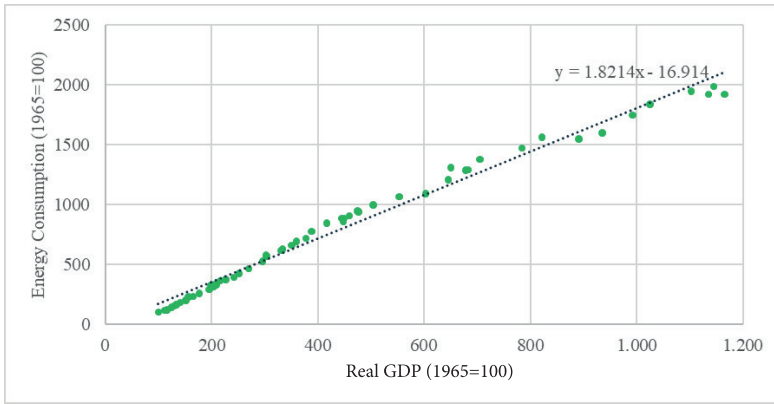


Figure 4. Türkiye's Real GDP and Energy Consumption (Exajoules) (1965-2020, 1965=100)
Source: BP and World Bank

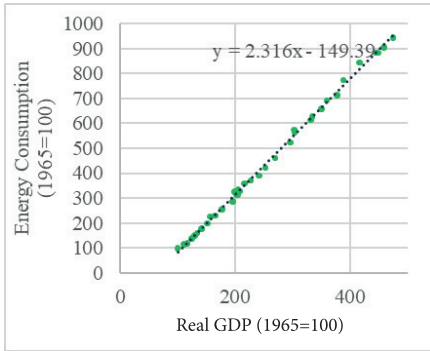


Figure 5. Türkiye's Real GDP and Energy Consumption (Exajoules) (1965-2000, 1965=100)
Source: BP and World Bank

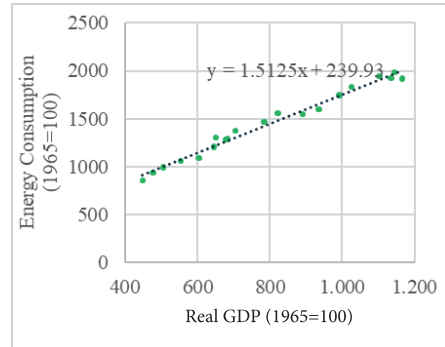


Figure 6. Türkiye's Real GDP and Energy Consumption (Exajoules) (2001-2020, 1965=100)
Source: BP and World Bank

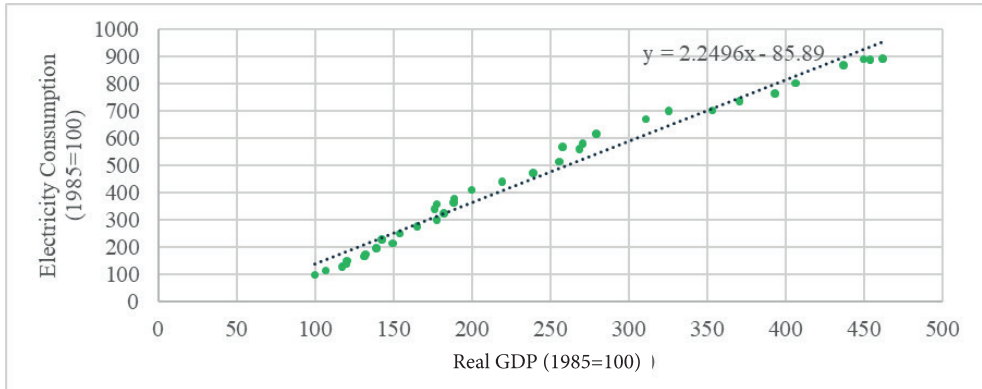


Figure 7. Türkiye's Real GDP and Electricity Consumption (Terawatt-hours) (1985-2020, 1985=100)
Source: BP and World Bank

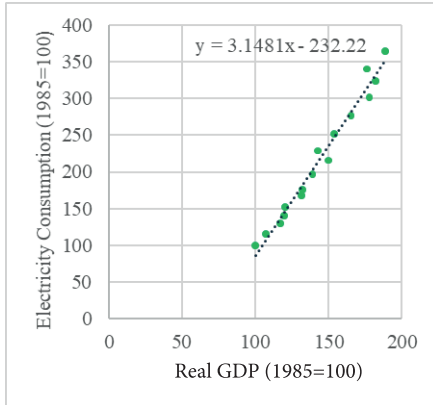


Figure 8. Türkiye's Real GDP and Electricity Consumption (Terawatt-hours) (1985-2000, 1985=100)

Source: BP and World Bank

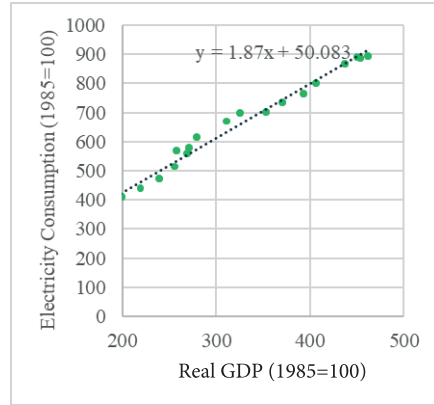


Figure 9. Türkiye's Real GDP and Electricity Consumption (Terawatt-hours) (2001-2020, 1985=100)

Source: BP and World Bank

4.2. Türkiye's Energy Import and Economic Size

Between 1970 and 2020, the energy imports and economic size indicators of Türkiye have shown a consistent correlation, much like the relationship between energy consumption and economic size. The Real GDP indicator depicted in the below graphs has been standardized by setting the real GDP value of 1970 to 100. Similarly, the energy imports indicator has been standardized by setting the energy imports value of 1970 to 100.

In the period between 1970 and 2020, a one-unit increase in the real GDP index resulted in a 3.4-unit increase in energy imports (Figure 10). However, when we divide this period into two sub-periods, there are differences in the amount of change in energy imports that cor-

respond to a one-unit increase in the real GDP index (Figure 11 and Figure 12). Specifically, between 1970 and 2000, a one-unit increase in the real GDP index led to a 3.9-unit increase in energy imports, while between 2001 and 2020, the same increase in the real GDP index resulted in a 2.5-unit increase in energy imports.

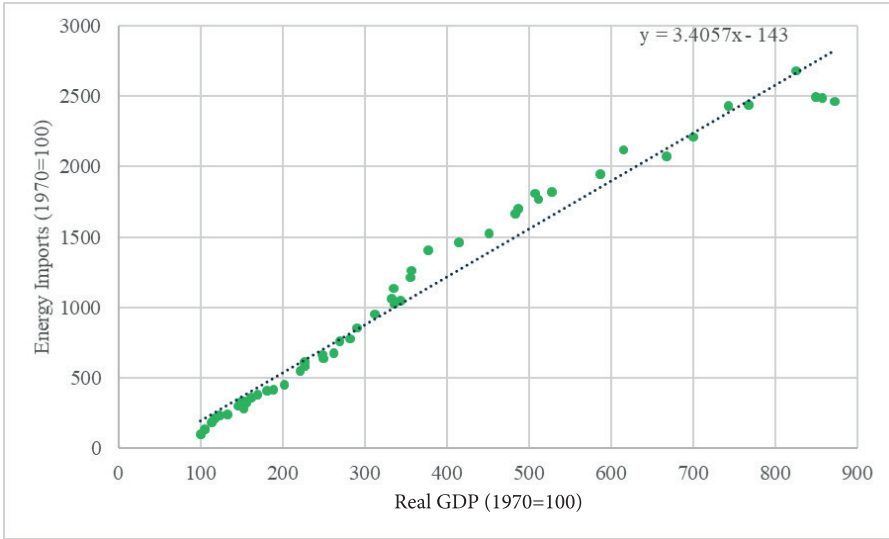


Figure 10. Türkiye's Real GDP and Energy Imports (Thousand Tons of Oil Equivalent) (1970-2020, 1970=100)

Source: MENRoT and World Bank

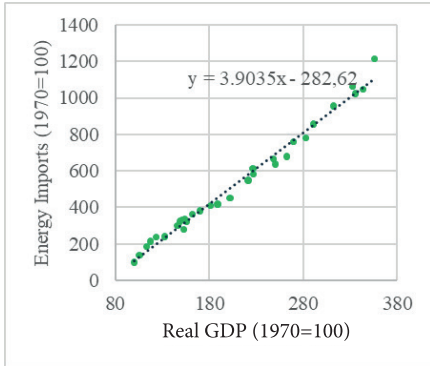


Figure 11. Türkiye's Real GDP and Energy Imports (Thousand Tons of Oil Equivalent) (1970-2000, 1970=100)

Source: MENRoT and World Bank

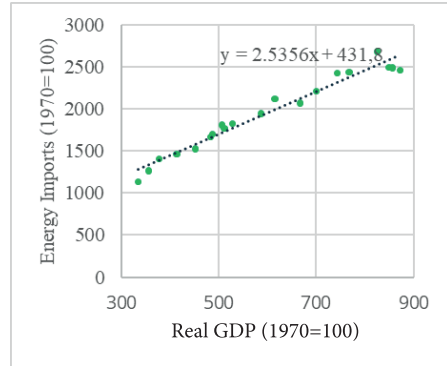


Figure 12. Türkiye's Real GDP and Energy Imports (Thousand Tons of Oil Equivalent) (2001-2020, 1970=100)

Source: MENRoT and World Bank

4.3. Energy Intensity of Countries

Based on the graphs provided, it appears that Türkiye has reduced its energy consumption for production in recent times compared to the past. This has resulted in a decrease in energy usage per unit of production. To measure this, an energy intensity index was computed by dividing the total energy consumption by Türkiye's real GDP index in local currency. In addition, to compare Türkiye's energy intensity changes with other countries, the same method was applied to several selected countries whose data is available in the BP database. Table 2 shows the changes in the calculated energy intensity index from 2000-2020 and 2010-2020. Table 2 shows that Türkiye has reduced its energy intensity, but other countries have been more successful. The equation below shows the energy intensity of each country:

$$ei_{it} = ec_{it}/gdp_{it}$$

ei_{it} indicates the energy intensity of the country i in year t . The energy intensity of a country is calculated by its total energy consumption divided by its real gross domestic product in local currency. Total energy consumption and real gross domestic product of country i in year t is shown by ec_{it} and gdp_{it} .

Developed countries, which have reduced their energy consumption relatively more, have not been able to reduce their energy intensity much since they lag behind developing countries in economic growth. The three largest developing countries - China, India and Russia - have managed to reduce their energy intensity by increasing their energy consumption, while the four largest developed countries - the United States, Japan, Germany, and the United Kingdom have managed to reduce their energy intensity by decreasing their energy consumption. Nevertheless, the United States, Japan, and Germany have lagged behind China and Russia in reducing energy intensity (Table 2).

Table 2 <i>The Energy Consumption and Energy Intensity Change over the Periods in the Selected Countries</i>					
Countries	Energy Consumption (Exajoule) ¹			Energy Intensity Change (%) ²	
	2000	2010	2020	2020-2010	2020-2000
Uzbekistan	2.15	1.88	1.87	-43.99	-74.65
Azerbaijan	0.47	0.47	0.62	22.16	-69.43

1 Total energy consumption includes all traded primary energy sources, including renewables.

2 When calculating the energy intensity indicator, the energy consumption of the country is divided by the real GDP of the country in local currency.

Ireland	0.62	0.64	0.62	-48.89	-60.04
Slovakia	0.78	0.73	0.62	-29.43	-59.47
Ukraine	5.68	5.10	3.31	-29.64	-58.50
Lithuania	0.28	0.24	0.25	-24.63	-58.35
Romania	1.50	1.42	1.33	-30.89	-56.78
Belarus	0.92	1.09	0.98	-17.81	-52.30
Bulgaria	0.78	0.75	0.69	-20.74	-50.91
Estonia	0.19	0.26	0.19	-46.37	-49.22
Poland	3.66	4.18	4.01	-28.66	-44.48
Denmark	0.85	0.82	0.59	-37.87	-44.06
Czech Republic	1.70	1.84	1.54	-28.73	-43.88
United Kingdom	9.57	8.92	6.89	-28.78	-42.54
Latvia	0.13	0.18	0.15	-36.07	-41.72
North Macedonia	0.11	0.12	0.10	-28.23	-41.49
Russian Federation	25.84	27.99	28.31	-11.06	-39.87
Switzerland	1.28	1.23	1.08	-23.94	-39.54
Cyprus	0.11	0.12	0.10	-24.34	-38.76
New Zealand	0.81	0.83	0.84	-21.45	-37.83
Hungary	1.01	0.99	0.97	-21.31	-37.20
Slovenia	0.28	0.31	0.27	-23.50	-35.58
Belgium	2.66	2.76	2.19	-26.38	-35.57
China	42.45	104.29	145.46	-27.92	-35.07
Israel	0.84	0.99	1.05	-24.25	-34.83
Luxembourg	0.13	0.18	0.14	-34.87	-34.47
United States	95.13	92.91	87.79	-19.57	-34.05
France	11.05	10.65	8.70	-21.45	-33.14
Sweden	2.23	2.16	2.20	-13.37	-32.66
Philippines	1.08	1.22	1.82	-4.64	-32.54
Finland	1.27	1.30	1.10	-21.00	-31.83
Canada	12.87	13.27	13.63	-10.61	-31.03
Indonesia	4.24	6.40	7.63	-23.65	-30.83
Australia	4.69	5.33	5.57	-17.32	-30.49
Japan	22.33	21.11	17.03	-21.99	-30.31
Germany	14.31	13.70	12.11	-20.57	-30.14
Croatia	0.34	0.38	0.33	-18.32	-28.78

Norway	2.00	1.73	1.93	-2.09	-27.51
South Korea	7.94	10.82	11.79	-15.35	-26.99
Qatar	0.48	1.20	1.71	3.31	-26.05
Sri Lanka	0.18	0.24	0.33	-6.97	-25.75
Netherlands	3.62	4.10	3.37	-24.85	-25.74
Spain	5.46	6.08	4.97	-17.10	-25.15
Kazakhstan	1.33	2.24	3.11	-1.06	-24.70
China Hong Kong SAR	0.71	1.16	0.93	-30.68	-24.37
India	13.37	22.48	31.98	-12.88	-23.64
Chile	1.10	1.33	1.61	-1.74	-22.47
Egypt	2.04	3.24	3.65	-21.29	-21.98
Malaysia	2.20	3.35	4.11	-17.02	-19.27
Austria	1.38	1.48	1.38	-12.21	-19.26
Greece	1.34	1.34	1.00	-3.49	-18.89
Italy	7.53	7.27	5.86	-12.24	-17.77
Türkiye	3.09	4.50	6.29	-15.48	-17.11
Colombia	1.11	1.44	1.77	-3.95	-16.21
Mexico	5.86	7.31	6.48	-21.98	-15.88
Portugal	1.05	1.08	0.93	-11.57	-15.36
Peru	0.52	0.81	1.00	-3.74	-13.28
Singapore	1.59	2.87	3.42	-12.19	-10.22
Pakistan	1.73	2.65	3.47	-8.89	-8.02
Trinidad & Tobago	0.43	0.84	0.62	-15.13	-6.52
Argentina	2.55	3.23	3.15	4.55	-5.19
Thailand	2.65	4.39	5.12	-6.29	-0.80
Ecuador	0.37	0.55	0.65	-0.50	-0.72
Morocco	0.42	0.70	0.88	-0.97	0.92
Brazil	8.04	10.95	12.01	6.75	1.28
Bangladesh	0.49	0.90	1.59	-4.97	1.72
Iceland	0.12	0.19	0.21	-16.95	8.43
Iraq	1.08	1.45	2.06	-4.17	8.96
United Arab Emirates	1.93	3.50	4.19	-10.17	11.47
Kuwait	0.76	1.41	1.51	-2.09	15.97
Algeria	1.08	1.58	2.30	21.95	22.27
Saudi Arabia	4.81	8.74	10.56	-5.46	23.39

Iran	5.03	8.72	12.03	24.89	37.59
Vietnam	0.75	1.87	4.09	19.95	57.00
Oman	0.41	0.87	1.37	23.45	93.19
Total	370.90	475.37	525.51	-16.42	-33.35
Source: BP and World Bank					

5. Conclusion

Türkiye has made progress in reducing its energy intensity of growth in past decades. The increase in energy consumption has been relatively less than the increase in GDP inferring a less energy-intensive mode of production in the overall economy. As upper-middle income country, Türkiye is looking for ways to reduce energy intensity without suppressing economic growth. Moreover, the sources of energy have a critical role in the sustainability of the environment and economic growth. In this context, Türkiye aims to diversify its sources of energy focusing on renewables.

However, exploring the change in energy intensity of economic growth across countries, we observe that some countries reduced the level of energy consumption over the past decades leading to a fall in the energy intensity of economic growth. This pattern is more common in relatively more developed countries that are also demographically in a more stable level. Part of the countries that reduced their energy intensity of economic growth managed it through lower level of increases in energy consumption compared to GDP. Türkiye is among the latter group. Yet, the cross-country comparison also shows that there is room for improvement for Türkiye.

The relationship between growth and energy consumption is affected by factors such as population dynamics and the sectors driving growth in developing countries. In Türkiye, improving energy efficiency in housing, transportation, energy generation, and industry may lead the way in transition to a greener economy. Considering the government commitments to climate issues, energy conversion policies, and investments in renewable sources, Türkiye is projected to decrease its energy intensity in economic activities. Efforts towards transitioning the energy use of industries, increasing the renewables and focusing on green economic activities may lead to new investment opportunities and new employment areas in Turkish economy.

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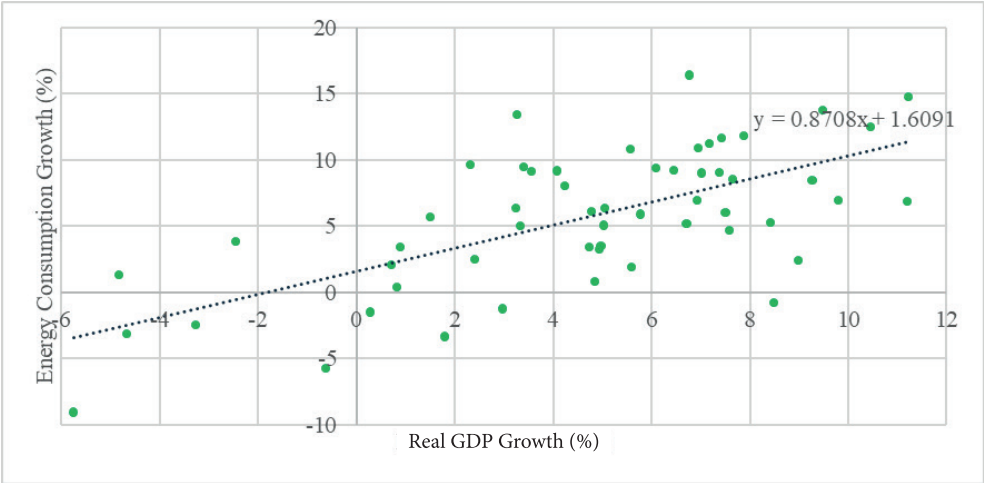
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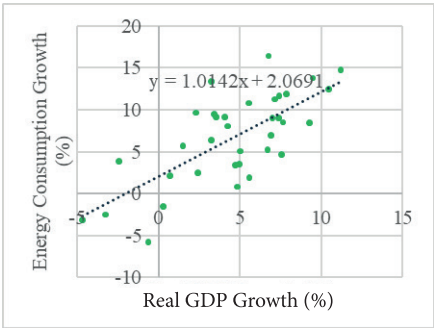
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Appendix

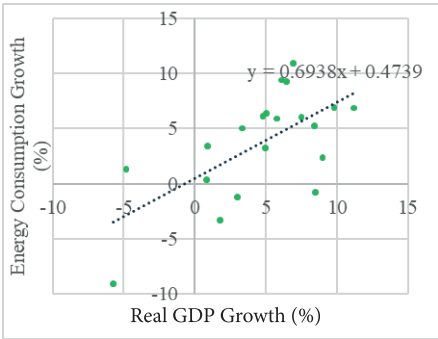


Graph A1. Türkiye’s Real GDP Growth and Energy Consumption (Exajoules) Growth (1965-2020, %)

Source: BP and World Bank



Graph A2. Türkiye’s Real GDP Growth and Energy Consumption (Exajoules) Growth (1965-2000, %)
Source: BP and World Bank



Graph A3. Türkiye’s Real GDP Growth and Energy Consumption (Exajoules) Growth (2001-2020, %)
Source: BP and World Bank

CHAPTER 5

THE GREEN ECONOMY POLICY AND DEVELOPMENT: THE EFFECTS OF DEVELOPMENT ON GREEN ECONOMY

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ABSTRACT

This research aims to elucidate the correlation between the Human Development Index (HDI) and the intensity of green policy adoption across 38 countries, using data from the Green Economy Tracker. Through Ordinal Logistic Regression, the study found that countries with higher HDI scores tend to exhibit lower green policy intensity. Conversely, life expectancy at birth and mean years of schooling were positively associated with green policy intensity. The findings hint that developed nations might have embedded green policies into their systems or may exhibit complacency, thereby lacking urgency in adopting new policies. The study also underscores the importance of environmental education and the intertwined nature of public health and environmental sustainability. While this research provides valuable insights into the interplay between sustainability and development, it acknowledges inherent limitations such as the cross-sectional nature of data and potential subjectivity in policy implementation.

Keywords: Economic Development, Environment, Human Development, Green Economy

1. Introduction

In the modern international economic setting, there is a growing recognition of the imperative to shift from a conventional, resource-driven economic system to one that foregrounds ecological responsibility – a resilient or ‘eco-centric’ economy. The United Nations Environment Division (UNED) characterizes an eco-centric economy as one leading to “enhanced human welfare and just societal conditions, while markedly curtailing environmental threats and ecological deficits” (UNED, 2011). Essentially, it entails reshaping and re-calibrating economic development to guarantee it harmonizes environmental stewardship with social inclusivity.

The upsurge in global temperature fluctuations, biodiversity diminishment, and the rising occurrence of severe climatic disturbances have illuminated the inadequacies of the customary economic framework, which frequently favors immediate profits over enduring ecological health (Stern, 2007). As a result, there’s an emergent demand to evolve towards an approach that coordinates economic prosperity with nature’s conservation. The eco-centric economy ethos provides a blueprint for this, accentuating the pivotal function of nature’s assets in economic prosperity and societal well-being.

Additionally, the conceivable economic boons of pivoting to an eco-centric economy are notable. For example, capital channeled into sustainable energy technologies, a cornerstone of the eco-centric economy, can catalyze job opportunities, fortify energy reliability, and curtail carbon emissions (Bowen, 2012). In a like manner, eco-friendly agriculture, an integral dimension of the eco-centric economy, can bolster food stability while diminishing the ecological impact of agrarian endeavors (Tilman et al., 2002).

The Developmental Objectives for Sustainability (DOS) ratified by the United Nations in 2015 amplify the significance of an eco-centric economy. A number of the 17 objectives, encompassing those pertaining to pristine water, cost-effective and uncontaminated energy, and conscious consumption and fabrication, either directly or tangentially, champion the tenets embedded in an eco-centric economic approach United Nations (UN).

To sum up, as the global populace confronts unparalleled ecological adversities, the eco-centric economy emerges as a guiding light. By orchestrating economic ascendancy with ecological integrity and societal integration, it sketches a trajectory towards a horizon where affluence is realized without jeopardizing the Earth or its denizens.

To delve deeply into the interconnections between ecologically-oriented policies and their repercussions on fiscal and developmental models, it is paramount to harness data sets that epitomize accuracy, thoroughness, and methodological precision. This research leverages data from the Green Economy Tracker by the Green Economy Coalition (GEC), Development indicators from the Human Development Index (HDI).

The Green Economy Tracker by the Green Economy Coalition (GEC) stands as a pivotal instrument in mapping the transition of nations towards sustainable economic frameworks GreenEconomyCoalition (n.d.). As a web-based tool, it offers a granular insight into 20 distinct policies distributed across five cardinal themes: Governance, Finance, Sectors, People, and Nature. This tool not only elucidates the policy contours of 38 countries but also provides a quantitative thrust by scoring nations based on their alignment with green economic principles. Through this, the Green Economy Tracker bestows a comprehensive panorama of the global stride towards sustainable policies GreenEconomyCoalition (n.d.).

Complementing the aforementioned data sources is the Human Development Index (HDI), a product of the United Nations Development Programme (UNDP). The HDI is a composite index measuring average achievements in three fundamental dimensions of human development: health (life expectancy at birth), education (mean years of schooling and expected years of schooling), and standard of living (GNI per capita) Organisation for Economic Co-operation and Development (OECD). The HDI's distinct approach to development, beyond mere economic indicators, offers a broader understanding of how policies might be influencing the well-being and quality of life in various countries.

In synthesizing data from the Green Economy Tracker, and the HDI, this research endeavors to present a multi-faceted exploration of the interplay between green policies and their ensuing impact on economic and developmental vectors.

2. Methodology

The essence of empirical research lies in the richness and robustness of the data it employs. In this study, the primary data sources are the Green Economy Tracker by the Green Economy Coalition (GEC) and a compendium of macroeconomic and development indicators from the Human Development Index (HDI).

2.1. Green Economy Tracker by the Green Economy Coalition (GEC):

The Green Economy Tracker provides a comprehensive overview of the green economy policies implemented by 38 countries (GEC, 2020). The tool encapsulates:

20 Policies: These policies are wide-ranging and delve into various aspects of the green economy. Each policy is meticulously described, providing a clear picture of its intent, scope, and implications. **Five Thematic Axes:** The policies are anchored around five predominant themes: Governance (how nations institutionalize and govern green policies), Finance (methods and instruments of green financing), Sectors (specific sectors' alignment with sustainability), People (socio- economic aspects), and Nature (conservation and natural resource management).

Scoring Mechanism: Each country is evaluated based on its alignment with the green economy principles across the policies, represented on a 5-point scale. This quantitative measure allows for cross-country comparisons and in-depth analyses.

This tracker stands as a testament to the global shift towards sustainability, charting the policy landscape across diverse economies GreenEconomyCoalition (n.d.).

2.2. Human Development Index (HDI) Development Indicators:

The HDI, presented by the United Nations Development Programme (UNDP), extends the scope of development beyond sheer economic parameters (UNDP, 2019):

Tri-dimensional Framework: HDI gauges development across three pivotal dimensions: health (life expectancy at birth), education (average and expected years of schooling), and standard of living (GNI per capita).

Composite Score: The HDI aggregates these dimensions into a single composite index, allowing for an integrated understanding of human development and its nuances across nations.

In sum, the confluence of the Green Economy Tracker's policy insights, HDI's broader developmental perspective offers a rich tapestry of data, enabling an incisive exploration of the symbiotic relationship between sustainable policies and their broader economic and developmental implications.

Given the nature of our research question and the characteristics of our data, the study's objective is to determine if there exists a relationship between the adoption of green economy policies (a discrete dependent variable) and macroeconomic and development indicators (continuous independent variables). Here's a description of the statistical techniques and analytical tools that would be appropriate for such a study:

We begin by summarizing the data with means, medians, standard deviations, and ranges for the macroeconomic and development indicators. This provides a snapshot of the data distribution and identifies any outliers or anomalies.

2.3. Ordinal Logistic Regression (Proportional Odds Model)

Given that the dependent variable from the Green Economy Tracker is ordinal (as policies are scored on a 5-point scale), an ordinal logistic regression would be apt. This technique is suitable when the outcome variable is ordinal, and the predictor variables are continuous or categorical. The method helps in estimating the odds of being in a particular category relative to a reference category.

3. The Green Economy Framework: A Review

In an era marked by environmental challenges, growing economic inequality, and rapid technological shifts, the concept of a green economy has gained traction as a promising pathway towards sustainable development. A green economy can be defined as “an economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities” (UNEP, 2011). The focus on economic growth, traditionally a yardstick for measuring development, has been expanded to include considerations of social inclusion, environmental sustainability, and resilience in the face of global threats such as climate change.

The Green Economy Tracker, designed by the Green Economy Coalition (GEC), embodies a structured approach to evaluating the progression of countries towards greener economies. It tracks 20 key green economy policies across 38 nations, encompassing diverse economic contexts and development stages. These policies, structured around five themes—Governance, Finance, Sectors, People, and Nature—are pivotal in defining a green economic transition in practical terms.

3.1. The Five Themes: Governance, Finance, Sectors, People, and Nature

Governance: Emphasizes the importance of strategic planning and inclusive decision-making. Policies under this theme promote a national green economy plan, inclusive governance, business strategies that support the UN Sustainable Development Goals (SDGs), and a comprehensive national wealth framework. **Finance:** Targets the reform of financial systems to support green transitions. This includes sustainable finance reform, fiscal and monetary policies aligned with environmental goals, rigorous stress tests for banks, and carbon pricing mechanisms. **Sectors:** Focuses on sectoral policies that promote sustainability. These policies support cross-sectoral green economy strategies, assistance to small businesses with green models, carbon budgeting, and clean energy targets. **People:** Centers on social inclusion, promoting green jobs, pro-poor policies, participatory policy-making, and innovative social protection schemes. **Nature:** Targets conservation and sustainable management of natural resources.

3.2. The 20 Key Policies ¹

3.2.1. Governance

National Green Economy Plan (1.1): This pertains to the execution of a nationwide green economy plan. Such a plan seeks to harmonize green initiatives in order to achieve a sustainable, inclusive, net-zero carbon economy by 2050.

Inclusive Governance (1.2): This emphasizes promoting governance that is not only inclusive but also sensitive to gender disparities. It also pushes for wider consultation and employee engagement in decision-making processes across both corporate and public sectors.

SDG Business Strategy (1.3): Governments are encouraged to devise strategies that recognize and reward businesses actively striving to meet the UN Sustainable Development Goals.

Wealth Accounting (1.4): This calls for a comprehensive national wealth accounting system that includes various capitals—human, social, natural, and financial/economic.

3.2.2. Finance

Green Finance Plan (2.1): This urges governments to prioritize sustainable finance reforms, creating more pronounced incentives for both public and private finance sectors to invest with a long-term vision.

Green Fiscal & Monetary Policy (2.2): Governments should introduce fiscal and monetary reforms that mitigate environmental systemic risks, informed by sustainability audits of state budgets and spending.

Safe & Accountable Banks (2.3): This promotes strict financial, environmental, and social evaluations for banks and financial institutions, ensuring they align with societal needs.

Pricing Carbon (2.4): Governments are encouraged to enforce robust and consistent carbon pricing mechanisms, whether through taxation or trading schemes.

3.2.3. Sectors

Green Sectoral Policy Plan (3.1): The formation of an autonomous, cross-sector body is proposed to create and synchronize green economy policies across pivotal sectors such as agriculture, energy, and transport.

Small Business Support (3.2): This emphasizes legal, financial, and regulatory support for SMEs and social enterprises championing green and sustainable business models.

Carbon Budgeting (3.3): States should commit to statutory carbon budgets, aligning with NDCs and the Paris Agreement's 1.5°C goal.

Clean Energy Policy (3.4): This entails the endorsement of rigorous targets for the share of renewable energy in consumption, supported by a clean energy investment plan.

3.2.4. People

Green Jobs (4.1) Governments should foster the creation of green job opportunities, aiding communities and individuals, especially those transitioning from environmentally detrimental sectors.

Pro-poor Policy (4.2): An integrated approach that simultaneously addresses social inequities, economic marginalization, and environmental conservation is advocated.

Participatory Policymaking (4.3): Transparent consultation and evaluation of government policies, with an emphasis on their impact on marginalized demographics, are essential.

Innovative Social Protection (4.4): This promotes innovative methods in social protection, basic income provision, and community ownership, ensuring broader citizen participation in the green economy.

3.2.5. Nature

Ocean & Land Conservation (5.1): Nations are advised to commit to SDG 14 and 15 targets, supported by an official strategy and consistent progress evaluations.

Natural Capital Accounts (5.2): Comprehensive natural capital accounts, highlighting the value of nature on multiple fronts, should be developed.

Natural Capital Committee (5.3): An independent advisory body on natural capital should be established to guide the government on budgets and planning that impact nature.

Nature-based Fiscal Reform (5.4): Financial and fiscal policies detrimental to nature should be replaced with sustainable conservation and restoration initiatives.

These themes and their corresponding policies provide a road map for countries to transition towards a sustainable economy. For instance, under the Governance theme, countries are encouraged to implement a national green economy plan and prioritize inclusive and gender-aware governance.

3.3. Correlation with Human Development Index (HDI)

Given the cross-sectional data from the Green Economy Tracker, it is possible to empirically investigate whether a correlation exists between the intensity or number of green policies adopted and the Human Development Index (HDI). HDI, a composite index measuring life

expectancy, education, and per capita income, can serve as an indicator of how green policies might influence broader aspects of human development.

In conclusion, the push towards a green economy is not just about preserving the environment but also about promoting equitable and sustainable growth. As nations grapple with global challenges, tools like the Green Economy Tracker provide a comprehensive frameo guide, evaluate, and accelerate their transitions towards a sustainable future.

4. Empirical Findings

The primary objective of Ordinal Logistic Regression (OLR) is to the probability of the dependent variable falling into one of its ordinal categories based on one or more independent variables. In this research context, the dependent variable is the score assigned to the adoption intensity of green policies (ranging from 1 to 5), and one of the primary predictors is the continuous Human Development Index (HDI).

Table 1—Overview About Data	
	score
HDI	-8.917523*
	(3.566538)
Life expectancy at birth	0.109537***
	(0.029748)
Expected years of schooling	0.055218
	(0.060393)
Mean years of schooling	0.204063**
	(0.074323)
Gross national income (GNI) per capita	0.000010
	(0.000007)
Observations	760
Prob ≥ <i>chi</i> 2	0.0000
Log pseudolikelihood	-1034.4495
Pseudo-R ²	0.0217
Standard errors in parentheses	
* <i>p</i> < 0.05, ** <i>p</i> < 0.01, *** <i>p</i> < 0.001	

In OLR, the coefficients signify the change in the log-odds of the outcome variable being in a higher versus a lower category for a one-unit change in the predictor variable, while holding all other predictors constant.

By clustering on 'Policies', you're adjusting the standard errors of the coefficients. This is to account for the potential non-independence of observations within the same policy group. In essence, observations within the same policy group might be more alike than those in other policies. Adjusting for this ensures more reliable and robust standard errors, leading to more accurate statistical significance tests.

For a given coefficient associated with HDI (let's assume this is not provided here for simplicity), the value represents the expected change in the log-odds for a one-unit change in HDI. Given the clustered nature of the data, this alteration acknowledges the fact that data might not be independently distributed across policies.

Exponentiating the coefficients gives you the odds ratios. An odds ratio greater than 1 implies that, for every one-unit increase in the predictor, the odds of the country being in a higher category of green policy adoption increase, given all else is held constant. Conversely, an odds ratio less than 1 indicates the odds decrease.

Wald $\chi^2(5) = 46.98$ and $Prob > \chi^2 = 0.0000$ suggest that the model is statistically significant at conventional levels. The predictors, taken together, provide information about the response variable beyond what would be expected by chance.

$PseudoR^2$ ($PseudoR^2 = 0.0217$) measure is a representation of the goodness of fit of the model. It indicates the proportion of variability in the dependent variable that's explained by the predictors. However, it's essential to note that this isn't directly comparable to R^2 in linear regression. While a higher pseudo R^2 indicates better model fit, this value suggests that the model explains about 2.17% of the variation in the ordinal dependent variable.

The standard errors have been adjusted for 20 clusters in policy, providing a clearer understanding of the variation within the dataset and resulting in more reliable coefficient estimates.

HDI (Human Development Index): The coefficient of -8.917523 indicates that for a one-unit increase in the HDI, the log odds of the dependent variable (intensity of green policy adoption) being in a higher category decrease by about 8.918, holding all other variables constant. Given the negative coefficient and a significant p-value (0.012), it suggests that higher HDI scores are associated with lower green policy intensity.

Life expectancy at birth: With a coefficient of 0.1095366 and a p-value of 0.000, for a one-year increase in life expectancy at birth, the log odds of the dependent variable being in a higher category increase by about 0.11. This suggests a significant positive relationship between life expectancy and green policy intensity.

Expected years of schooling: The coefficient of 0.0552178 is not statistically significant (p -value = 0.361), indicating that the expected years of schooling does not have a statistically significant effect on green policy intensity when other variables are held constant. Mean years of schooling: The positive coefficient of 0.2040634, with a significant p -value (0.006), indicates that for each additional year in mean years of schooling, the log odds of the dependent variable being in a higher category increase by about 0.204, holding other variables constant. This indicates a significant positive correlation between the mean years of schooling and green policy intensity.

Gross national income (GNI) per capita: The coefficient of 9.95e-06, with a p -value of 0.169, is not statistically significant, suggesting that GNI per capita does not significantly influence green policy intensity when other factors are accounted for.

In summary, among the considered predictors, HDI, life expectancy at birth, and mean years of schooling have statistically significant associations with the intensity of green policy adoption, with HDI showing a negative correlation while the latter two display positive correlations. The expected years of schooling and GNI per capita did not exhibit statistically significant effects. Remember, the coefficients represent log odds; to understand the odds ratio, one would exponentiate the coefficients.

However, it's crucial to approach this interpretation with caution. A significant coefficient does not necessarily imply causation. Other external factors, not included in the model, might be influencing the relationships. Additionally, the Pseudo R² is relatively low, suggesting that other unaccounted variables might further explain the variability in the green policy intensity.

5. Discussion

The relationship between sustainable (green) economy policy and the broader indicators of human development is of paramount importance for policymakers, especially in an era where sustainable growth is central to global development agendas. Our analysis, drawing from cross-sectional data from the Green Economy Tracker and development indicators from HDI, sheds light on these intricate dynamics.

5.1. Key Findings and Interpretations

Negative Association of HDI with Green Policy Intensity: The results indicate that nations with higher Human Development Index (HDI) scores tend to have lower green policy intensity. This negative relationship may imply that nations with higher HDI, typically developed nations, might have already integrated certain green policies into their governance, deeming

them as standard practices rather than special initiatives. Another interpretation is the possible complacency of developed nations, relying on their established infrastructures and systems, without feeling the urgency to adopt more green policies. (Daly, 1997)

Life Expectancy and Green Policy Intensity: The positive relationship between life expectancy and the intensity of green policy adoption could be grounded in the notion that nations with better health outcomes recognize the long-term benefits of environmental sustainability, which contributes directly to public health. This echoes sentiments from the World Health Organization, which underscores the intertwined relationship between health and environmental policies (Theakston, 2013).

Education and Green Policy Intensity: The positive correlation between the mean years of schooling and green policy intensity underscores the role of education in sustainable policy-making. Nations with a higher average schooling period are more likely to have an informed citizenry that understands the value of sustainability, thereby pressuring governments to adopt more green policies (Tilbury, 1995).

5.2. Recommendations and Implications for Policymakers and Economic Stakeholders

Re-evaluation of HDI's Role: Policymakers in nations with high HDI scores should revisit their green policy initiatives. Despite their development status, there's room for enhanced green policy integration, ensuring that sustainable practices are deeply ingrained in their economic fabric.

Public Health and Environment Linkages: Governments should be cognizant of the interconnectedness of public health and environmental sustainability. Investment in green policies could be viewed as a long-term public health strategy, given the correlation with life expectancy. *Prioritize Environmental Education:* The evident correlation between education and green policy intensity underlines the importance of environmental education. Nations should integrate environmental sustainability into curricula, ensuring that future generations are equipped to champion and prioritize green initiatives (UNESCO, 2005).

Given the relatively low pseudo R^2 value, there is a need to explore other potential predictors or factors influencing green policy intensity. These might include cultural values, political systems, and grassroots environmental movements. This study accentuates the intricate relationships between human development indicators and green policy adoption. While certain findings, like the negative association between HDI and green policy intensity, might seem

counter-intuitive, they underscore the complex interplay of development and sustainability. Policymakers and stakeholders must approach sustainable development holistically, considering a wide range of factors, to pave the way for a greener future.

6. Limitations and Further Research Avenues

The quest to understand the relationship between the adoption of green policies and human development, as measured by the Human Development Index (HDI), is both timely and relevant. By leveraging data from the Green Economy Tracker and development indicators from the HDI, this study seeks to unearth possible correlations. However, as with any empirical investigation, there are inherent limitations that need acknowledgment.

6.1. Limitations

Cross-Sectional Nature of the Data: The Green Economy Tracker provides cross-sectional data, capturing a specific point in time. This limits the ability to track dynamic changes and temporal effects on the relationship between green policies and HDI. Longitudinal data could offer more insights into how this relationship evolves over time (Baltagi, 2008).

Subjectivity in Policy Intensity and Implementation: While the number of policies adopted can be quantified, assessing the 'intensity' or 'effectiveness' of each policy can be subjective. The tracker may list a policy as 'adopted', but in practice, the implementation and enforcement of such a policy can vary significantly across countries (Bennett and Howlett, 1992).

HDI as a Sole Measure of Development: Although HDI is a comprehensive index capturing health, education, and income dimensions, it does not encompass all aspects of human development, such as political freedom, environmental sustainability, and subjective well-being. Thus, relying solely on HDI might miss out on other crucial developmental aspects (Stiglitz, Sen and Fitoussi, 2009).

Potential Omitted Variable Bias: There could be unobserved factors affecting both the adoption of green policies and HDI, which are not accounted for in this study. For instance, political will, civil society activism, and cultural values can play a pivotal role but might not be explicitly captured (Wooldridge, 2015).

Heterogeneity Across Countries: The study encompasses 38 countries, each with its unique economic, social, and political context. Aggregating or averaging across such diverse entities may lead to the 'ecological fallacy,' where inferences about individual country relationships are derived from aggregate data (Robinson, 2009).

6.2. Further Research Avenues

Future studies could benefit from panel data that captures changes over multiple time points. Such an approach would allow for the assessment of both inter-country differences and intra-country changes in the adoption of green policies and HDI (Hsiao, 2003). Incorporating other indices, like the Inclusive Wealth Index or the Genuine Progress Indicator, could provide a more holistic view of development in relation to green policies (Costanza et al., 2014). Detailed case studies of specific countries could offer more nuanced insights into the challenges and successes of green policy implementation and its impact on development. Integrating qualitative data from interviews, surveys, or fieldwork could shed light on the ground realities, challenges, and nuances of green policy adoption and its influence on human development.

While this study endeavors to bridge the knowledge gap between the adoption of green policies and human development, acknowledging its limitations ensures the conclusions drawn are contextualized and grounded. Further research can build upon these limitations, refining our understanding of the intricate relationship between sustainable policy adoption and human development.

7. Conclusion

The intersection of human development and the adoption of green policies reveals a complex tapestry of socio-economic dynamics, shaped by multifaceted determinants and outcomes. Drawing on cross-sectional data from the Green Economy Tracker and HDI metrics, our exploration unravels some of the core associations and correlations that punctuate this relationship.

Firstly, the inverse relationship between HDI scores and green policy intensity paints a layered picture. On the surface, it may appear paradoxical that nations with higher development metrics might be less aggressive in their green policy initiatives. However, a deeper dive suggests that developed nations could have already mainstreamed certain green policies into their governance framework, rendering them less visible as distinct policy thrusts. Alternatively, the inertia of established infrastructures in high HDI countries might be attenuating the urgency to introduce fresh green initiatives.

Secondly, the association between life expectancy – a cardinal health metric – and green policy intensity underscores the symbiotic relationship between environmental sustainability and health outcomes. Countries with better life expectancy seem to be cognizant of the environmental underpinnings that fortify public health, translating this understanding into sustainable policies.

Lastly, the positive correlation between mean years of schooling and green policy adoption testifies to the transformative power of education. It suggests that societies with prolonged educational exposures are likely fostering a citizenry more attuned to sustainability imperatives.

However, the richness of these findings is counterbalanced by the study's inherent limitations. The cross-sectional nature of the data, potential subjectivities in policy intensity evaluation, and reliance on HDI as a solitary development barometer cap the comprehensiveness of our insights. Additionally, the relatively modest *Pseudo-R*² emphasizes that there remain myriad factors, unexplored in the present study, that can influence green policy intensity.

In conclusion, while the study delineates several intriguing pathways linking human development indicators and green policy adoption, it simultaneously beckons more granular explorations. The global endeavor towards sustainable development mandates such inquiries – the insights from which can guide nations towards a more harmonized confluence of development and sustainability. Policymakers, armed with this knowledge, can craft strategies that don't just propel nations forward, but do so in a manner that bequeaths a greener, more sustainable legacy for future generations.

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CHAPTER 6

CLEAN ENERGY POLICY, CLEAN ENERGY EXPANSION AND POLITICAL DEBATE- A RECENT OUTLOOK

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ABSTRACT

Energy plays a pervasive role for the economic development of a country and fossil fuels took the responsibility as a catalyst for energy production for long days. But observing the recent environmental detrimental significances, assertive polling is accumulating for clean energy. Policy support should perform actively for the expansion of clean energy continuing the steadiness of the industrial and economic phase and balancing the global energy debate due to the energy transition.

The aim of the paper is to explore the influencing scenario of the clean energy policy on global energy politics by a qualitative screening of the studies. The paper gets that with some challenges, the clean energy expansion has started its positive contribution to the local and international economy though the fossil fuel rich countries are extending political debate for shrinking their global control. Proper comprehensive policy and regulatory & political support can irrigate a fair level playing field for declining the geopolitics steadily.

Keywords: Clean energy policy, Energy politics, RE expansion

Jel Classification: Q42, Q48, Q49

1. Introduction

In the past, the burning of fossil fuels has been the primary method for generating electricity in both developed and developing countries. This is due to the need to support economic activities and meet the growing demand for energy. The use of fossil fuels has been instrumental in shaping the socio-economic landscape of countries and driving the global industrial revolution. This is because nearly all economic activity relies on energy, making the development of sustainable energy sources a crucial priority for many nations.

Depending more on fossil fuel-based power plants the developed countries exposed thousands of tons of carbon dioxide (CO₂) and other Green House Gases (GHG) in the environment and energy sector emits 2/3 of the global GHG (Matthaus 2020). According to our present knowledge, the excessive amount of CO₂ in the air is the root cause of global warming and climate change.¹ Observing the detrimental significances of climate modification, a strong opinion is growing in the countries against using fossil fuels in power generation and paying attention to energy transition, i.e., increased usage of renewable energy sources (RES). They are investing in research and development of related technologies. International organizations and development agencies of the world also prefer and encourage investments in clean energy field. In that the universal policy makers are focusing on 100% zero carbon free clean energy generation by 2050 (IEA 2021). For making the clean energy policy successful, the policy makers are focusing three main conditions — efficiency, effectiveness and legitimacy. Those three are interdependent and cannot perform individually. The policy can be sighted as an application of green industrial policy for the practicing energy sector (Pegels et al. 2018). For expanding this broad objective in structural ways, the policy implication is being robustly prioritized not hampering the steadiness of the countries' industrial and economic phase. *“The energy transformation will be the one of the major elements that reshape geopolitics in the 21st century alongside trends in demography, inequality, urbanization, technology, environmental sustainability, military capability, and domestic politics in major states”* (IRENA—GCGET 2019, p. 24). So, the paper focuses on how clean energy policy is influencing global energy politics — positively or negatively?

2. Literature Review

Clean energy is such type of energy that produces power not imposing any negative impact on the environment and which does not emit or emit a negligible quantity of harmful gases

¹ <https://www.carbonbrief.org/solar-wind-nuclear-amazingly-low-carbon-footprints>

4–6 grams CO₂ emits for generating one kilowatt-hour (kWh) electricity from solar/wind. The emission range is 109 grams for coal, 78 grams for gas, 700 grams for high-speed furnace oil (HFO) and 350 grams for liquefied natural gas (LNG).

like GHG, CO₂ to the environment. Wind power, solar power, and some hydro resources are widely used renewable energy sources treated as clean energy (also it is called green energy).²

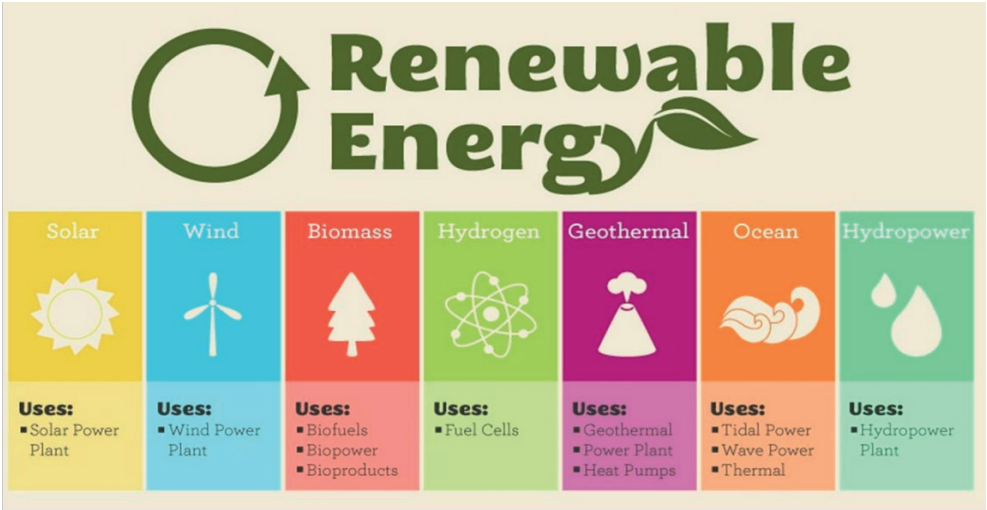


Figure 1: Sources of clean/renewable energy

Source: <https://www.twi-global.com/technical-knowledge/faqs/clean-energy>

The business case of renewable energy (RE) and cost declining of RE technologies; pollution and climate change; accelerating RE deployment target; RE technology innovation; corporate and investors’ action for lessening carbon footprint; and public opinion towards RE — those six enabling trends are forcing to drive the deployment of RE (IRENA—GCGET, 2019). Gradually, clean energy is contributing to the GDP of a country. If the ratio of low-emission electricity to total electricity is increased by 1%, then the GDP will up by 0.16%, and CO₂ will decrease by 0.848% (Zhang et al., 2021). Literally, it has said that low-emission can chase the target of low-carbon economic development.

In other side, policies are rules, principles, guidelines, or frameworks that are adopted or designed by an organization or a country for chasing its long-term goals. Renewable energy, i.e., adoption of clean energy is growing robustly in the recent years and it needs to expand more and faster to bring about an energy transition that obtains the climate targets, ensures energy access for all, diminishes air pollution and advances energy security and the formatted framework highlighting the goals are mentioned as clean energy policy (IEA 2018). Supporting the IEA’s statement Pegels et al. (2018) mentions that “*Green energy policy encompasses any policy measure aimed at aligning the structure of a country’s energy sector with the needs*

2 <https://www.twi-global.com/technical-knowledge/faqs/clean-energy>

of sustainable development within established planetary boundaries- both in terms of the absorption capability of ecosystems and the availability of natural resource” (p. 27).

The primary aim of the support policies of RE is to arouse growth in capacity and production. RE support policy is spreading day by day globally and nowadays every country has at least one RE target. The number of countries which are promoting RE via direct policy support has been tripled from at least 48 in 2004 to at least 147 by 2017 (IRENA-IEA-REN21, 2018). The energy policy is required to be —

1. Structured under the terms of technological ambiguity, i.e., focused at fostering innovative technologies toward profitable viability (Altenburg & Lütkenhorst, 2015);
2. Formulated for long-run to cover long lasting transformation process (Pegels et al., 2018); and
3. Comparatively selective than suggested by the neoclassical views of public choice theory (Falck et al., 2011) for providing directivity and tapering the technological progress strips (Altenburg & Lütkenhorst, 2015) for expanding novelty and dispersion.

Transition to green energy/clean energy from the conventional energy and for making the system fruitful, the policy paradigm has been recast to organize, plan and operate the power system. The power system cannot be isolated rather it is entrenched into the energy system, the economy, the society and the earth (figure 2) along with multiple interactions and feedbacks between these systems (IRENA, 2020). As nations strive to combat climate change, there is a growing effort to reduce the use of fossil fuels and increase the utilization of clean energy sources. This shift in energy production also involves a transformation of economies as a whole. The transition from fossil fuels to electricity marks a change in the way the world operates, with electricity becoming increasingly vital in comparison to carbon. However, as the energy industry evolves, so too will the political landscape surrounding energy (Boyer, 2014; Szeman, 2014; Szeman & Diamati, 2017).

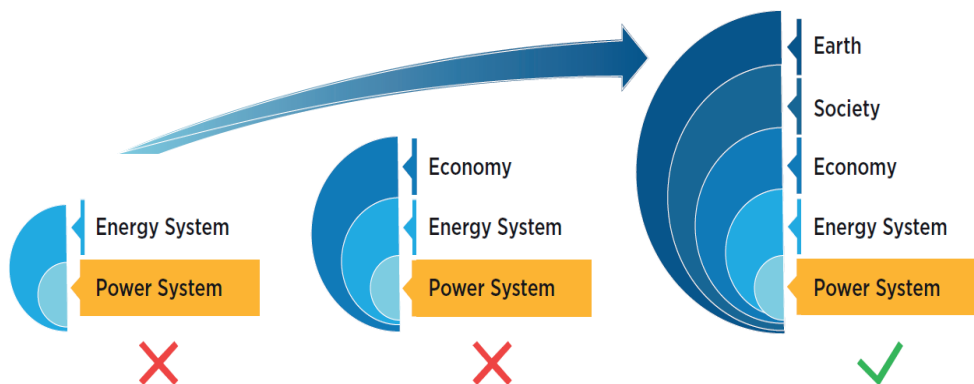


Figure 2: The embedded power system transition to clean energy
Source: IRENA (2020), p. 6

Finding out the potentiality of solar and wind energy technologies, those are included into the energy system beset by the energy democracy as a prime site of political-economic challenges and the mentioned technologies are picked-up for deploying high volume of clean energy (Angel, 2016; Burke & Stephens, 2018).

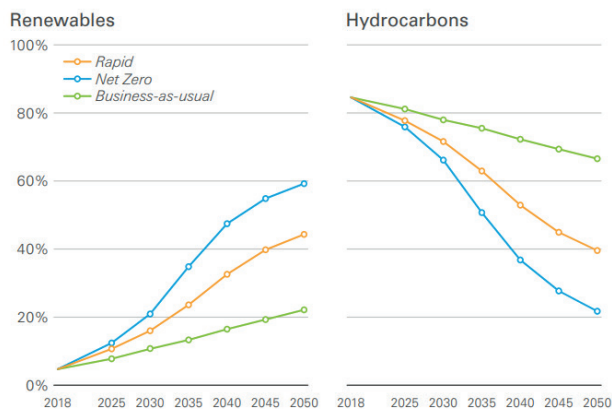


Figure 3: The world's energy transition (% of primary energy)
Source: bp energy outlook (2020), p. 64

The clean energy is in the increasing trend and the fossil fuels are in declining mode under 3 different future scenarios like rapid, net zero and business-as-usual (figure 3). Adoption of policy support is tremendously facilitating to march it steadily.

On the contrary, the transition to clean energy poses a significant challenge for regions heavily dependent on fossil fuel exports for revenue, such as the Middle East. These nations are

already resisting the shift, with countries like Saudi Arabia and Russia frequently obstructing progress at annual UN climate talks. Saudi Arabia, in particular, has attempted to maintain its oil and gas production while also expanding its solar power sector. Similarly, Poland, a major coal producer, was hesitant to support the EU's goal of net-zero emissions. In a time when the world is already grappling with the economic impact of the coronavirus pandemic, fossil fuel-producing countries are concerned about additional job losses as the shift to clean energy accelerates (Hook & Sanderson 2021).

Mentioning some negative impacts Lockwood (2015) says that as the green energy policy involves high level of uncertainties and risk factors, considering the high commonness of political capture, there are essentially needed to implement transparent and tight monitoring. In this context, Pegels et al. (2018) added that overcoming the uncertainties and risks, a rational and transparent policy process; incessant and methodical policy erudition; selections for remedial activities and utilizing the co-benefits are of highest paybacks.

The policy paradigm is impactful on the clean energy expansion and other diversified gains. Analyzing the policy effects of clean energy, i.e., renewable energy, Böhringer et al. (2013) mentions that differentiated effects are happened like demand for labor in the market, price of electricity, reduction of subsidy in coal energy for suitable policy implication. Mu et al. (2018) finds an impact of the renewable energy policy in China on renewable energy-based employment generation. They find that there was an increase of employment due to the expansion of solar PV and wind power generation. Oh et al. (2020) gets a positive relation among renewable energy policies, renewable energy generation and GHG emission reduction (i.e., environment). The large share of renewable energy will support to emit less amount of GHG in the environment. Along with lessening the CO₂ emission, RE policy creates the socio-economic upliftment for the state (Rennkamp et al., 2017). Realizing the benefits and practicability, the European Commission has changed its state aid guidelines to the energy field in 2014 and the new guidelines established the competitive bidding (i.e., auction) as the main scheme to provide state aid for RE expansion from 2017 (Bues & Gailing, 2016; Leiren & Reimer, 2018; Botta 2019). For proving the example of EU policy issue, the author selected seven open and developing EU countries (Greece, Hungary, Italy, Poland. Portugal, Romania and Spain) who are practicing RE auction as support policy for the expansion of clean energy in those countries.

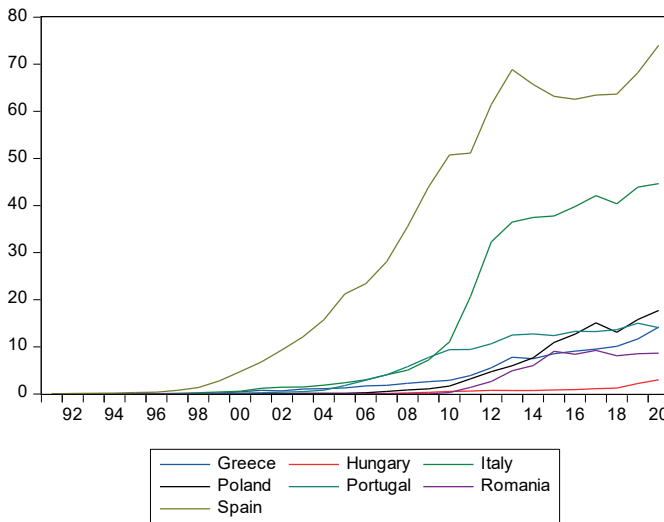


Figure 4: Total Solar & Wind Generation (Terawatt-hour)

Source: Author's edition, bp Statistical Review of World Energy July 2021³ by using Eviews 10

The graph (Figure 4) depicts that the RE visibly started in the countries in 2000s and the broad expansion was visible after 2009. The policy support guidelines of EU also help those countries to expand RE robustly from 2014 and afterwards. The growing generation trend of clean energy is also remarkable in the COVID-19, i.e., in the year 2020.

Constructing report based on the policy enablement and macro vitals, the effective policies like tariff policy amendment 2018; the wind-solar hybrid policy 2018; the National wind energy policy 2015; the feed-in-tariff policy 2018 have awarded India to the robust clean energy deployment country and given the 4th position of the renewable energy country attractiveness index (RECAI) 2018 (Kumar & Majid, 2020). In 2021, the country achieved the 3rd position in the same index.⁴ Fighting against the climate crisis, very recently Germany has reformed the biggest energy policy in the decades. The main aim of the new law (draft) is to about 100% clean energy supply by 2025 and for this, the laws propose to face-up new land for green power production, speed-up permit procedures, and robust expansion of wind and solar addition.⁵ Applying univariate order and binary probit model, Groh & Möllendorff (2020) get that for the support of the clean energy transition in Germany, the perceived importance of policy goals and framework conditions is to higher relevance. They also find that political orientation is a prime catalyst of the perceived importance of the policy goals.

3 <http://www.bp.com/statisticalreview>

4 <https://www.statista.com/statistics/1121004/renewable-energy-country-attractiveness-score-global/>

5 <https://www.cleanenergywire.org/news/germany-boosts-renewables-biggest-energy-policy-reform-decades>

The concept of energy transition which induces the response of energy democracy emerged as a politically loaded call for today to a process, an outcome or a goal depending on the context it is used (Szulecki & Overland, 2020) where energy democracy links with energy justice, energy sovereignty, energy citizenship and energy decolonization those are correspondingly cohesive with political prerogatives within the discussion point for clean energy transition (Burke & Stephens, 2018). Here is needed to mention that energy democracy and energy transitions are primarily political (Laird, 2013). And this system of politics used to pilot clean energy transitions will momentarily stimulus the opportunity for additional democratic prospects (Mitchell, 2009). Achieving true energy democracy involves giving the public and communities the power and ownership of renewable energy systems, such as land, renewable generation facilities, microgrids, and small to medium-scale storage technologies. This also requires implementing policies and principles that promote capacity building at the community and regional levels. To achieve this goal, we must focus on enhancing democratic practices and ensuring positive outcomes. Currently, the centralized politics of fossil fuels coexists with decentralized energy systems. However, the transition to renewable energy, distributed generation, and democratic politics are all hindered by the current centralized energy politics. To overcome this challenge, greater emphasis should be placed on decentralizing energy politics to align with the decentralized nature of renewable energy systems. (Burke & Stephens, 2018).

Hall and Klitgaard (2012) and Kunze & Becker (2015) propose a theory of energy technological politics that states that the use of concentrated energy sources, such as fossil fuels, leads to the concentration of economic and political power. This theory forms the basis of the energy democracy movement's approach to advocating for renewable energy sources. The movement argues that renewable energy sources, which are more diffuse, lead to more distributed forms of power and decentralized political relationships. The relationship between energy and politics is often described as a trade-off between concentration and decentralization. Concentrated energy sources, such as fossil fuels, tend to lead to centralized political power and weaker democracy. In contrast, decentralized energy sources, such as solar and wind power, offer more flexibility and tend to lead to distributed political power and stronger democracy. These theoretical relationships highlight the importance of energy choices in shaping political systems.

Historically, the possession and control of fossil fuels has played a significant role in determining geopolitical power. The threat of oil embargos or gas shortages has led to the formation of alliances and even wars, and those with access to oil reserves have amassed great

wealth. However, as the world shifts towards clean energy, a new set of nations and regions will rise to power. Some have even referred to it as a “clean energy space race.” Those who excel in the development and implementation of clean technology, export renewable energy, or reduce their dependence on fossil fuels stand to benefit in this new energy landscape, while nations heavily reliant on exporting fossil fuels such as the Middle East or Russia may see a decline in their power and influence (Mumford, 1934; Boyer 2011; Mitchell, 2013; Burke & Stephens 2017; Hook & Sanderson, 2021; Bordoff & O’Sullivan, 2022).

RE is different from many aspects from conventional fossil fuels and those differentiations will have geopolitical consequences (IRENA-GCGET, 2019). The report points out four specific reasons for geopolitics—

1. The fossil fuels are concerted in the specific geopolitical location where as RE sources are available in one mode or another form in the most of the countries of the world. This is lessening the standing of the continuing energy choke opinions;
2. Most of the RE are the flow sources not the stock sources like fossil fuels. The stock can be stored and used for one time; but flow sources do not deplete and tough to interrupt;
3. RE can be utilized at outmost level at any scale and it is possible to lend them better to decentralized forms of energy production and consumption which improves to the democratizing upshot of RE; and
4. RE sources have about zero marginal cost and especially solar and wind sources relish cost discount about 20% for every doubling of capacity which boosts their ability to change the geopolitics.

But the snapshots are explaining differently. Moving away from fossil fuels and towards renewable energy sources does not eliminate the need for interdependence; it simply shifts it to different aspects of the energy mix. Instead of relying on hydrocarbons, we will now depend on metals and rare earths. Countries in Africa, Asia, the Americas, and Australia are likely to become major suppliers of these minerals, and the transportation routes used to ship them may create new geopolitical opportunities (Crow & Saran, 2021).

In recent years, as the demand for copper and cobalt has risen in response to the shift towards clean energy, China’s prior investments in these resources appear to be a smart move. Copper is crucial for electric cables and wind turbines, while cobalt is used in electric vehicle batteries. China currently leads the world in production of solar photovoltaic panels, electric

vehicles and wind power, and is also the largest producer of batteries. Additionally, China controls a significant portion of the raw materials vital for the clean technology supply chain such as cobalt, rare earth minerals, and polysilicon, which are primary component in solar panels wind turbines, and energy-efficient lighting. Russia also has potential in this area. Despite trade disputes and tariffs imposed by the US and EU on Chinese photovoltaic panels, and new regulations in Europe potentially limiting imports of Chinese batteries, China's dominant position in the clean energy sector is likely to remain. (Hook & Sanderson 2021). According to the latest figures, there was an increase in the percentage of global solar supply chains dominated by Chinese companies. In 2021, eight of the top ten solar companies in the world were Chinese, compared to 38% in 2019 (Rapoza, 2021). Additionally, China's domestic solar industry also saw significant growth. China had a total 100% production capacity of solar ingots and wafers themselves. By the end of 2020, China controlled 80% of the global solar-cell manufacturing capacity (Tagotra, 2022). So over the course of the transition, the small number of countries that supply the vast majority of critical minerals will enjoy new-found influence. The shift to renewable energy will bring new forms of competition related to the sources and technologies used as well.

During the climate summit, there were signs of disagreement regarding the promised \$100 billion in aid for developing countries that was pledged by wealthy nations in 2009, with a deadline of 2020. This commitment has yet to be fulfilled and even this large sum is a fraction of the estimated \$1 trillion to \$2 trillion required annually for investments in clean energy in developing and emerging market economies, in order to reach net-zero emissions by 2050. As the urgency and costs of decarbonization increases, the inability of wealthy nations to provide aid to poorer countries will likely become a major source of geopolitical conflict, particularly as developing nations are disproportionately affected by damages they did not cause (Bordoff & O'Sullivan, 2022).

According to Rennkamp et al. (2017), with the sufficient domestic political support, the RE policy may be executed in middle income countries. They also mention that structure of the economic incentives, participation of the private sector, policy uncertainty, policy strategy and base load power are the main political arguments against RE policy. Supporting the statement Mazzucato (2013) mentions that green energy policy can change the whole market scenario, lessen the price and create the conducive atmosphere for profit making if the policies became favorable, and then government faces extra pressure for investment. He also mentions that long-term investment will not be effective if there are unpredictable environment of political rules and decisions. The powerful interest groups like the giant energy businessmen may

influence the outcome of supervisory accomplishment of government entities by following lobbying culture and offset the envisioned aim of incentive schemes. The government of the developing countries cannot ignore the lobbying of the giants due to weak monitoring systems, lack of transparency and poor capabilities (Pegels et al., 2018).

The transition to a net-zero global economy will require a significant level of international collaboration, but it may also result in conflicts and create winners and losers. Countries with strong economies and technology, such as China and the United States, may have a competitive advantage during the transition. On the other hand, countries heavily dependent on fossil fuel exports, such as Russia, may face challenges and potentially negative impacts on their economy and international relations. The shift towards clean energy will likely have a significant impact on Russia's relationship with other major nations.

The idea that the transition to clean energy will be seamless is unrealistic. The overhaul of the energy system, which is a fundamental aspect of the global economy and shapes the geopolitical order, will inevitably bring about significant changes. Additionally, it is not always clear who will benefit and who will be affected negatively. For example, nations heavily dependent on fossil fuels may experience temporary increases in power before ultimately facing decline. The areas of the world with the least resources will need large amounts of energy to improve their living conditions, while simultaneously dealing with the worst consequences of climate change. Clean energy will bring new opportunities for nations to gain power; but another face of a coin is also true.

3. Methodology

In this review, I divided the process into two stages. First, I conducted a conceptual review of the term “energy democracy” by researching both non-academic and academic literatures that used the term. I included several peer-reviewed articles that focused on community-based renewable energy initiatives (Kunze & Becker, 2015). Starting in May 2022, I used various search engines in China, European Union, Middle East and the United States to find sources using the terms “renewable energy policy”, “renewable energy expansion”, “energy politics”, “energy democracy” and “energy and democracy,” resulting in roughly two dozen reports, articles, websites, and videos. Over the next months, I expanded my search by looking at activist group websites, commonly cited references, and participating in webinars.

During my engagement with the perspectives of the energy democracy & geopolitical movement, and inspired by Mitchell's questions about the political possibilities for the end of the oil age (Mitchell, 2013), I realized that the review should also include an examination of

the theoretical foundations of the relationships between renewable energy policy, expansion and political power. In the second stage, from June to September 2022, I expanded my search terms to include “renewable energy policy and expansion”, “energy political power”, “renewable energy democracy”, “renewable energy political power” and related terms, excluding only terms that were only similar in name (e.g. “democratic party”, “democratic republic”). I searched through academic libraries, Web of Science, Scopus, and popular search engines to find English-language peer-reviewed academic literature and published books that were related to my objective. I reviewed the sources in four iterative steps. First, I coded the sources to identify definitions, findings, conclusions, and calls for research. To further expand my research, I added sources based on references cited within my initial collection, particularly historically significant works (e.g., Mumford, 1934), resulting in a total of approximately 65 sources reviewed. My process involved repeatedly sorting through the coded materials by topic, identifying patterns and relationships, writing analytic memos, and making observations (Miles & Huberman, 2014). The topics that emerged for the conceptual review of energy policy, expansion and politics included origins and advocates, definitions, purpose, barriers, principles, and policies. The topics for the theoretical development included energy and democracy, renewable energy and political power, renewable energy policy and expansion and tensions, gaps, and ambiguities. The breadth of the work I reviewed and the topical categories that emerged led me to approach the coded material through two distinct lines of inquiry to more deeply understand the themes of energy democracy and its uptake, and the relationships between renewable energy policy, expansion and political power.

The review of the concept of energy democracy and the energy democracy movement is summarized and discussed in more detail in Burke and Stephens (2017). Through my review of existing literature, I discovered the concepts of *energopower* and *energopolitics* (Boyer, 2011; Boyer, 2014; Szeman, 2014) and used them as an analytical lens to understand the relationships between political power and *energetic* power. *Energopower* and *energopolitics* extend Foucault’s notions of *biopower*, which refers to governance over life and populations, and biopolitics, which refers to the processes by which life and populations become objects of political strategy (Foucault, 2009; Szeman, 2014). I understand *energopower* as the dynamics of power over modern life organized and enabled through energy, and conversely, the forms of energy organized and enabled through dynamics of power. *Energopolitics* is further understood as the operations of power to leverage the transformational capacity of modern energy sources (Boyer, 2011; Boyer, 2014; Szeman, 2104). These concepts support an understanding of political and *energetic* change and stability as dimensions of broader cultural dynamics,

which open up the possibility for further inquiry from different perspectives. For this reason, I have adapted these concepts for a broader audience and refer to them as energy-politics. In addition to its relevance to the energy democracy movement, I chose this analytical lens of energy-politics to emphasize the relational dimensions among energy policy & expansion, systems of energy and political power (Bues & Gailing, 2016), rather than focusing solely on energy technologies themselves, while acknowledging the unique role that fossil-based energy systems play in the governance of modern life and the shaping of modern cultures (Szeman & Diamanti, 2017). The third step involved organizing the sorted materials within a conceptual outline to guide the initial drafting of the review sections. Finally, once drafted, I revisited the analytical memos and reflections I had made throughout the process, sorted them further, and used them to synthesize and critically assess the reviews, confirm or modify topics and organization, and identify key implications and gaps to support theoretical development.

4. Findings and Recommendations

The International Energy Agency estimates that in order to achieve a net-zero carbon world by 2050, a significant portion of global electricity generation and transportation must be powered by renewable sources. Specifically, they estimate that 88% of global electricity generation and 61% of global transportation must be fueled by renewables (IEA, 2021). After analyzing the literatures, due to the change of global environment perspectives and fixed target, the policy makers are aligned with the energy transition from fossil fuel (FF) based energy generation to RE based energy generation. The policy makers admit that the power system must consider the societal as well as environmental assessment. For getting a structural return, clean energy policy and support schemes are highly required — no doubt. Yes, there are some challenges while gains are huge — clean energy expansion has already started its positive contribution to the local and global economy like increasing demand of labor market in RE field, fall of electricity prices, reduce subsidy in FF-based energy etc. The empirical evidences of the cited literatures in this paper state about the decisions and actions taken by the selected EU countries and India regarding clean energy policy and its expansion. The gains from the well-designed RE policy are summarized in figure 5.

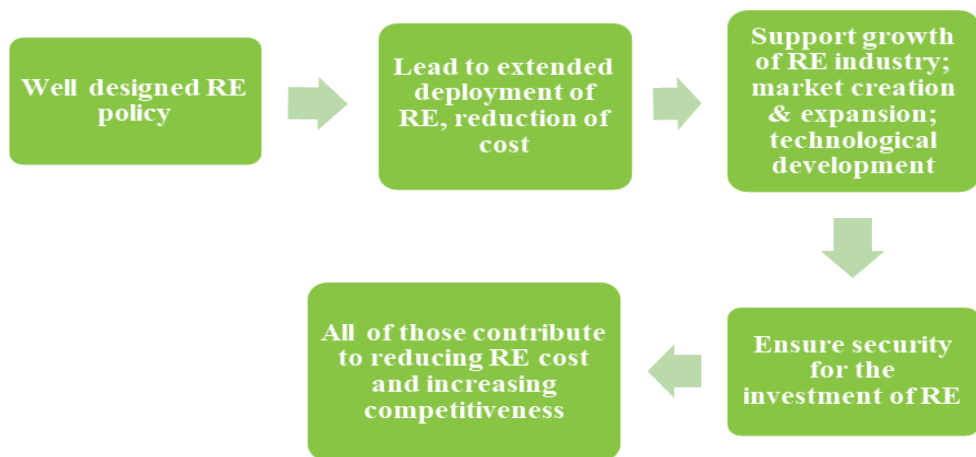


Figure 5: Gains from well-designed RE policy

Source: Author's own creation from reviewed literatures

Renewable energy policy promotes energy democracy and access to low-cost energy for low-income and middle-income countries. Unlike fossil fuels, which are often concentrated in specific locations and subject to volatile costs, renewable energy sources are widely available and relatively stable. However, some countries that currently control fossil fuel resources may resist the adoption of renewable energy due to concerns about losing their influence. For example, China's investment in renewable energy technologies may increase its global influence. On the other hand, countries that rely heavily on fossil fuel exports and do not transition to renewables may risk losing influence and facing economic challenges (IRENA-GCGET, 2019). The global giant energy business entities are running their lobbying for stopping the robust deployment of RE.

The current scenario says that the energy transition is not abolishing the need for interdependence. Rather it becomes a new dimension of influence (like the gigantic majority of perilous minerals) and competition (like sources and technologies used). If the situation does not change, then the under developed and developing countries will be the prime sources of geopolitical conflict.

Global power structure and relationship dynamics might be changed for the clean energy transition. Power will become more decentralized and diffused assertively for the poor and middle-income countries. For the wellbeing of the society, strong monitoring, transparency, upgrading of technology and bilateral cooperation can help countries to become self-sufficient and to face the upcoming geopolitical challenges related to clean energy expansion.

A comprehensive approach to the future of energy, which necessitates the involvement of leaders from major nations to establish a new framework that aligns with the evolving energy landscape. Organizations such as the International Energy Agency (IEA), OPEC, and commodity exchanges have played a significant role in shaping the hydrocarbon industry. However, the shift towards renewable energy requires new structures, organizations, and political agreements that take into account the perspectives of multiple stakeholders in both the public and private sectors. Otherwise, it will be a result in geopolitical conflict that tends to craft winners and losers.

5. Conclusion

Ultimately, the world requires a new institutional framework to ensure a reliable clean energy supply in the 21st century. The clean energy industry still faces a variety of challenges, both related to the technology itself and to policy and regulation. A lack of comprehensive policy and regulations can make it difficult for governments to fully invest in the clean energy market. Without government support, it can be hard to fill key positions and reduce environmental degradation. To address these issues, measures must be implemented in a reliable and transparent manner, and actions taken to gain the trust of individuals. With systematic political support, a transition to clean energy can be made economically viable and help to shape the future of renewable energy, reducing the impact of global energy politics.

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CHAPTER 7

THE UKRAINE-RUSSIA WAR AND ITS RELATIONSHIP WITH CLIMATE CHANGE

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ABSTRACT

In recent years, many new strategies have been prepared to solve the problem of climate change. In this context, the European Union stands out the most. While the European Union has been working for the announcement and solution of the problem on the international platform since the 1990s, it put forward the European Green Deal strategy in 2019. It pledged to become a carbon-neutral continent by 2050. New environmental strategies followed the European Green Deal strategy in other countries. However, the Ukraine-Russia War has created a crisis that could trigger many problems related to climate change and negatively affect the strategies put forward. Climate change is associated with many problems, including the environment, energy, food, and migration. Prolonging this ongoing war in Ukraine will deepen these problems and make it more difficult to find a global solution to climate change. Therefore, this study evaluates the relationship of the Ukraine-Russia War with issues such as environment, energy, and food. This war will reduce the chances of success of climate change strategies, especially the European Green Deal, because the resources that could be used for climate change will be used to mitigate the effects of the war. In addition, the European Union's stopping the purchase of natural gas from Russia and turning to alternative energy sources and countries will cause the European Union's carbon emissions to increase. The pollution caused by the war will make the problem of climate change even more unsolvable.

Keywords: Ukraine-Russia War, Climate change, Environment

Jel Classification: F51, N44, Q54

1. Introduction

Many recent scientific studies have found valid findings that the climate crisis is the greatest threat to the planet's future. Public policies based on the fight against this crisis have been implemented, especially in welfare states. However, gaining energy independence has an impact on the implementation of these policies, as well as the fight against the climate crisis. The issue of energy independence was also reflected in various environmental strategies prepared by non-governmental organizations, policy parties, etc., before the wealthy states put forward a valid climate strategy.

The Ukraine-Russia War, which started in the first months of 2022, suddenly became the most discussed topic in the international community due to civilian casualties, refugees and other humanitarian reasons. Western states began to condemn Russia one after the other, while many economic sanctions against Russia were announced. Ukraine, on the other hand, continued its struggle against Russia with the international support it received. Since the beginning of the war, issues such as the impact of the war on the economy have continued to be discussed in world public opinion. At the same time, the aspect of the war related to climate change has been neglected. The war intersects with many issues related to climate change and causes deepening problems such as environment, food, energy and migration.

On the one hand, these consequences of the war will challenge the plans of the European Union (EU), which has a zero carbon target. On the other hand, it will increase food prices and reduce access to basic nutrients in countries in danger of poverty and hunger. The war will also have environmental consequences such as ecosystem destruction, biodiversity loss and nuclear-chemical pollution. All of these situations are related to the climate crisis. In addition, the military mobilization caused by the war increases carbon emissions; thus, the climate crisis solution becomes more complex. In this study, first of all, the possible effects of the Ukraine-Russia War on climate change were evaluated. Then, the effect of this war on Turkey in the context of climate change is discussed.

2. The Problem of Authoritarian State in Green New Deal Plans

In his article, Thomas Friedman (2007) called for a green new deal for the USA. According to Friedman, the Green New Deal, a plan widely discussed in the following years, is necessary. This plan was inspired by the New Deal prepared by Franklin D. Roosevelt, President of the United States, in 1933. The New Deal pulled the US out of the crisis of the Great Depression and helped solve many macroeconomic problems. The Green New Deal, like the New Deal, will not only revitalize the economy but will also increase the share of renewable

energy in the energy mix and reduce the country's dependence on foreign energy. Today, the fossil fuel energy sector is dominated by authoritarian states.¹ Suppose the practice of a green new order is successful. In that case, the transfer of resources to authoritarian states (by the US) will be reduced and significant progress will be made in achieving energy independence (Friedman, 2007).

In the aftermath of the 2008 Global Financial Crisis, a study prepared by European Greens (Green New Deal for Europe) argued that a green new order would be very useful in decarbonizing the economy, increasing social welfare, reducing income inequalities and solving unemployment. The Green New Deal for Europe proposal, which is in line with Thomas Friedman's approach to energy independence, emphasizes energy independence and states that the resources of the EU, which is considered the cradle of democracy, should be prevented from flowing to authoritarian states (Kapoor et al., 2011). Today, the issue of energy independence continues to be debated in the EU and the US. It is argued that the Ukraine-Russia War could be a chance for Western states to gain energy independence and could be used to put pressure on Russia.², an authoritarian state. Green New Deal advocates are generally clear about their views on this war. For example, in a declaration, the European Greens called for economic sanctions against Russia, the termination of energy agreements with Russia (in this context, Germany's termination of Nord Stream 2 was welcomed) and faster action to reduce energy dependence (European Greens, 2022).

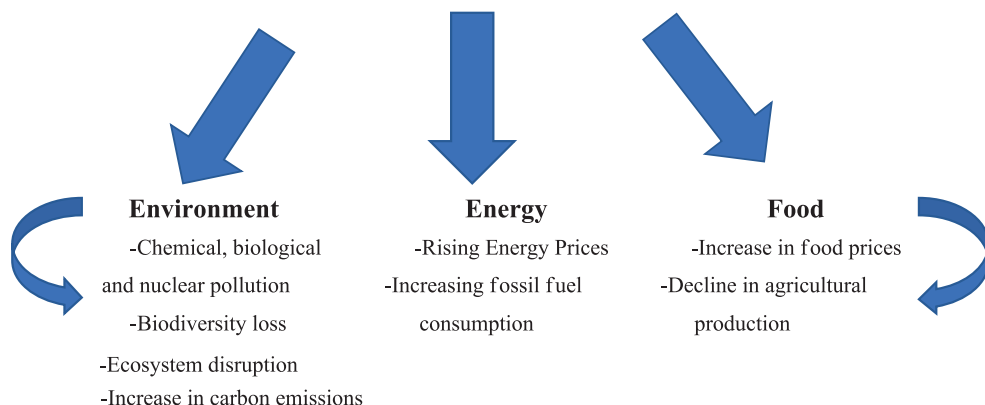
US Senator Bernie Sanders, a supporter of the Green New Deal and who himself drafted a Green New Deal bill during his presidential campaign, takes a different position than the European Greens on the Ukraine-Russia War. According to Sanders, Russian President Vladimir Putin and the oligarchs around him are responsible for the war. Therefore, instead of punishing the Russian people with an economic embargo³, it would be better to remove

1 There have been many studies on the authoritarian state, and one of the most notable of these was prepared by Nicos Poulantzas. Poulantzas mentioned some important elements that make up the characteristic of the authoritarian state. These include a concentration of power in the executive power; blurring of the separation of powers; transformation of the boundaries of public and private space; arbitrary policies restricting civil liberties; a rapid decline in the role of political parties and the transfer of their functions to the bureaucracy; the rise of technocracy; increase in state use of physical and symbolic violence; the creation of a huge web of social control; the transfer of power from an official and open level to a 'core' executive group, thus replacing public information with state secrets; In order to realize all these, the legal system of the rule of law is turned upside down and finally the process progresses in a contradictory and inconsistent character, giving the impression that it is 'blind'. Cited in: Karahanoğlu and Türk, 2018, p.406.

2 Azerbaijan, Qatar and Egypt are also counted among the new energy partners of the EU, along with the USA. It should not be forgotten that Azerbaijan, Qatar and Egypt are authoritarian states. In an analysis by the Economist Intelligence Unit (EIU) for 2020, these countries were included in the authoritarian state category with Russia. Source: EIU, 2021

3 The EU made it difficult for ordinary Russian citizens to travel to the EU by making a decision that Sanders did not recommend. This decision was implemented in September 2022. Source: European Commission, 2022

Putin and the oligarchs around him from the Russian government. Sanders also believes that the continuation of this war will create various risks not only in the region but also globally. Therefore, Sanders stated that instead of supporting the war, it is necessary to act hastily to end the war (Sanders, 2022).



Source: Prepared by the author.

Figure 1. The potential impacts of the Ukraine-Russia war on climate change

3. Risks Linked to the Climate Crisis

The climate crisis is recognized as one of the world's biggest challenges today. Therefore, the solution to this problem should be one of the priorities of all local, regional and international institutions. However, as can be seen from past examples, the climate crisis has sometimes been put on the back seat for economic and political reasons (the Russian invasion of Crimea in 2014 caused the EU to prioritize this issue). Today, it is believed that such a risk has emerged due to the Ukraine-Russia War and that this will harm the fight against climate change. Moreover, the war causes risks to grow in food, energy and environmental issues that are related to climate change. The second part of the study discusses the risks associated with climate change.

3.1. Environmental Problems Caused by War

The Ukraine-Russia war will exacerbate issues related to human health and the environment, such as climate change-related biodiversity loss, soil degradation and the inability of the ecosystem to regenerate itself. Therefore, this aspect of the war should be discussed regarding the potential damage it could cause (Pereira et al., 2022, p.2). The OECD has addressed this environmental aspect of the war in a report. According to this OECD study, one of the most important risks of war is the destruction of refineries, energy production sites and chemical plants, as well as the release of harmful substances into the air and water, which could put

human health at risk. This problem will threaten human life in Ukraine and the entire region where the war is taking place (OECD, 2022, pp. 4-5). After the risks posed by chemical facilities, another important problem is related to nuclear leakage. Some of the world's largest nuclear facilities are located in Ukraine. According to available data, the radiation level in Chernobyl has increased even though it has not been long since the war started. Damage to Chernobyl and other nuclear facilities due to war could result in a nuclear disaster for Ukraine and Russia and globally (Pereira et al., 2022, p.3).

Another concern is related to the pollution created by military operations. Military operations will significantly increase the amount of waste. These wastes include toxic wastes, medical wastes and military wastes. The negative impact of these wastes on the environment and human health is inevitable. Another impact relates to natural habitats. As the war grows, military mobilization will significantly damage protected areas, particularly forests. Finally, the use of weapons will have long-term negative impacts on environmental health. Toxic ingredients in military munitions will contaminate soil and water (OECD, 2022, pp. 4-5).

The defense sector is one of the largest emitters of greenhouse gases (Rawtani et al., 2022, p. 8). Wars cause intense greenhouse gas emissions due to the high dependence of military equipment on fossil fuels. Although there is no clear observation of the Ukraine-Russia War, it can be said that military activities, directly and indirectly, increase greenhouse gas emissions (Pereira et al., 2022, p.3). It can be assumed that nuclear, biological and chemical weapons similarly create air pollution. In addition, various facilities that are hit, especially military depots, cause leakage of toxic gases due to their chemical content (Rawtani et al., 2022, p.8).

The ecosystem is unable to repair itself due to economic pressure. As a result, biodiversity has decreased rapidly compared to the pre-industrial period (Flipo, 2022, p.50). Wars and the devastating impact of wars on biodiversity are other reasons for the decline in biodiversity, which has been proven in previous wars. Military activities, especially fires caused by war, threaten biodiversity. In the case of Ukraine, there are no clear findings on biodiversity yet. Ukraine's biodiversity is home to 35% of all European biodiversity. With one of the most important ecosystems in Europe, it is estimated that the war has affected 44% of Ukraine's natural reserves (Pereira et al., 2022, p.3).

Finally, one of the potential impacts of the war is on water and hygiene. Toxics are likely to leak into drinking water due to the damage to infrastructure caused by the conflict, especially in developed industrial areas of Ukraine. In addition, toxic wastes are expected to be mixed into groundwater due to the mines hit. (Rawtani et al., 2022, p.8). Water shortages and water

pollution are known to occur under war conditions. The local population is estimated to be affected by similar situations in the Ukraine-Russia War (Pereira et al., 2022, p.4).

3.2. The Problem of External Dependence on Energy

As an energy exporter, Russia has been an unreliable country for the EU and the US. According to these countries, this distrust stems from Russia's use of its energy resources as a political weapon, especially against the EU. Russia's invasion of Crimea in 2014 exacerbated this mistrust and led the EU to turn to energy importers other than Russia and to compensate for the EU's energy needs through "safe" means. Even before the outbreak of the Ukraine-Russia War, negotiations between the EU and the US were held to meet the EU's energy needs. The US wanted to offer more LNG (liquefied natural gas) to the European market (Bocse, 2020, pp.8-9). With the outbreak of the war, the EU decisively imposed economic sanctions against Russia. In the EU, the war was predicted to increase fossil fuel consumption in the short term but accelerate the transition to renewable energy in the long term. However, this may not occur for several reasons. The first is that even if the demand for natural gas decreases, it will not end completely. The fact that EU member states want to continue importing natural gas will prevent achieving the desired targets. Second, although renewable energy is a clean and reliable energy source, it is not a sufficient source for electricity generation.

Moreover, natural gas is still needed for renewable energy to be actively and safely used in electricity generation. Finally, the transition to renewable energy is a process that takes a long time. Increasing the share of renewables in Europe's energy mix will reduce fossil fuel imports. This will lead to volatility in the fossil fuel market and trigger new crises originating from importing countries.⁴ (Misik, 2022, p.2-3).

As Carfora et al. (2021) state, the fact that imported energy resources largely meet the EU's energy needs is one of the main reasons for the EU's energy dependence. According to Eurostat data, the figure below shows the energy import dependency of 27 EU countries between 1990 and 2020. As can be seen from the figure, despite the developments in renewable energy, the EU's dependence on imported energy shows an upward trend compared to the 1990 level. The EU's dependence on imported energy, around 50% in 1990, approached 60% in 2020. According to Eurostat data, Russia has a 43% share in the EU's natural gas imports and a 29% share in oil imports (Eurostat, 2022).

4 If the sanctions announced by the EU against Russia are not terminated, Russia has announced that it will respond by cutting off the natural gas flow to the EU in September 2022. This could lead to an increase in the costs of European industry and a reduction in production. Source: Sauer, 2022

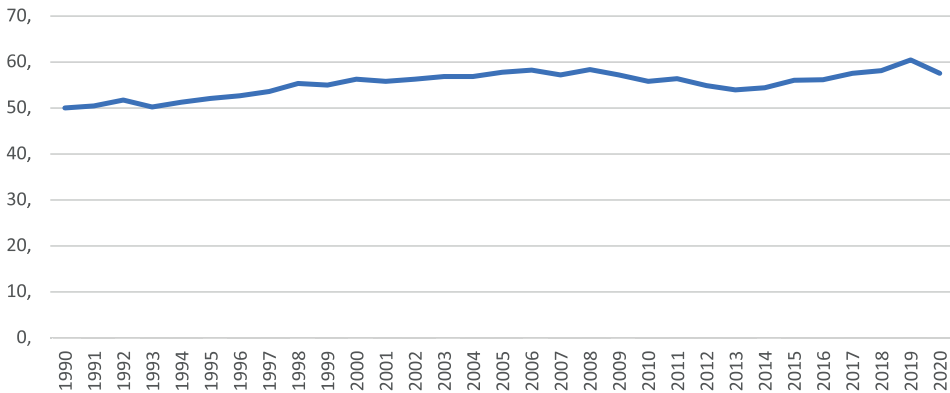


Figure 2. EU's External Energy Dependency Ratio (Between 1990 And 2020)

Source: Eurostat, 2022

In order to become energy independent, the EU has implemented the REPowerEU strategy. The main objective of this strategy is to end the EU's dependence on Russia for energy (complete cessation of energy imports from Russia by 2030). Other exporting countries will meet the EU's natural gas needs and this strategy will also accelerate the transition to renewable energy. Another objective of this strategy is to strengthen mutual relations with the EU's partners in the Balkans (Ukraine, Moldova, etc.) on energy against Russia (European Commission, 2022-b, p.1-2).

However, Russia is still one of the EU's largest suppliers of fossil fuels. Giving up natural gas purchases from Russia under REPowerEU would cause fluctuations in energy prices. As can be seen in the figure below, natural gas prices have already risen since the start of the war in February. These EU initiatives could have a similar effect to the yellow vest protests.⁵, placing an energy burden, especially on low-income Europeans (Trading Economics, 2022).

5 Yellow vest protests are France-based protests by Europeans whose purchasing power has decreased due to increased taxes and energy prices. Source: Kipfer, 2019

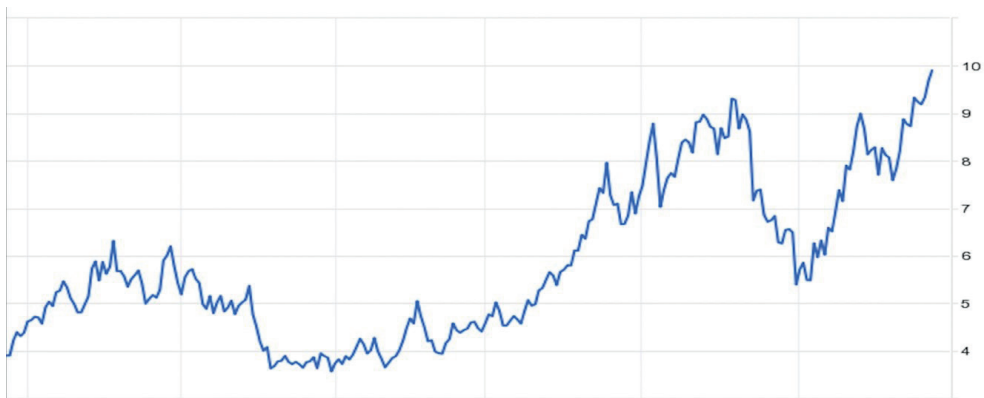


Figure 3. Natural Gas Prices (\$/MMB_{tu}) (between September 2021 ve August 2022)

Source: Trading Economics, 2022

The EU's energy path will have negative impacts not only on households but also on the environment. The EU's shift from Russian natural gas to US LNG will increase carbon emissions. This is because when LNG is imported from the US, emissions increase due to production and transportation. This will complicate the EU's plans to completely decarbonize the economy by 2050 (Reymond & Rimbert, 2022, p.6). Moreover, the uncertainty caused by natural gas has led to an increase in demand for coal⁶, one of the most polluting fossil fuels. According to the International Energy Agency (IEA) assessment, coal consumption in the EU will increase by around 7% by the end of the year (IEA, 2022).

One of the goals of the European Green Deal is to involve non-EU countries that trade with the EU in the fight against climate change. However, the EU's return to coal will cause the EU to lose its credibility. Moreover, Russia plans to export its natural gas to India, China and Japan. As developing countries, India and China's energy needs are increasing daily. By selling to these countries the fossil fuel that Russia cannot sell to the EU, Russia will reinforce its fossil fuel dependency. In addition, the increase in the EU's carbon emissions will reduce its sanctioning power over these countries (Reymond & Rimbert, 2022, p.6).

3.3. Food and Poverty Problem

One of the most important consequences of climate change is related to food. Droughts, disruption of water cycles and other problems caused by climate change are leading to the inability to cultivate the land and a decrease in agricultural production. COVID-19 has al-

6 Reducing coal consumption is one of the goals of the COP26 summit in Glasgow to combat climate change. The increase in coal consumption in the EU and the resumption of coal power plants directly contradict the targets set in Glasgow. Source: UNCCC, 2021, p.10

ready created various problems in the global supply chain, and the Ukraine-Russia War has exacerbated the problem in the food sector. This is because Russia and Ukraine are the leading countries in global agricultural production.⁷ These two countries have a large share in global production, especially in cereals, sunflower seeds and cottonseed oil. Increased military mobilization will cause many problems in Ukraine, including the inability to cultivate the land, harvest crops, damage to the food supply chain and agricultural infrastructure⁸. This situation strengthens the interpretation that this could be the biggest food crisis since the Second World War⁹ (Pereira et al., 2022, p.2). Information from FAO (Food and Agriculture Organization) confirms the existence of this crisis. While the FAO's food price index was 65 in 2004, it reached 160 in March 2022, immediately after the war. There was a slight decline in this index in the following months, but there was still an increase of 10.1 percentage points in August compared to August of the previous year (FFPI, 2022).

Various studies have addressed the global consequences of this situation. For example, a study by the World Health Organization concluded that African countries highly dependent on Ukraine or Russia for grain imports would be affected by this crisis (Belkaid, 2022, p.15). In the study conducted by UNEP (United Nations Environment Program), the consequences of problems in food supply due to war will not be limited to Africa because 36 countries worldwide import more than 50% of their wheat from Ukraine and Russia. Since the beginning of the war, inflation in grain prices has eroded household incomes by around 1.5% on a global average. Low-income households, who spend most of their income on food, will likely be hit harder by the crisis (UNEP, 2022, p.9).

War also causes an increase in food prices through higher energy prices. Many countries in the world depend on Russia for energy. An increase in energy prices due to war will also affect the agricultural sector because one of the main inputs of agriculture is energy. The increase in agricultural costs will affect the prices of agricultural products and the situation will worsen for less developed countries and low-income people.¹⁰ (FAO, 2022, p.12-13).

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- 7 In 2021, Russia and Ukraine will be among the top three countries in wheat, corn, rapeseed, sunflower seed and oil production. Source: FAO, 2022, p.3
 - 8 The land is another factor affected by wars. The soil is expected to be affected by physical, chemical and biological pollution. This situation causes a decrease in land use capacity and productivity in Ukraine, which has one of the most fertile lands in the world (Rawtani et al., 2022, p.8).
 - 9 According to UNEP, the war has already triggered a global crisis. Approximately 1.7 billion people were affected by issues such as finance, food and energy caused by the war Source: UNEP, 2022-b, p.17
 - 10 Another important aspect regarding agriculture is the leading role played by Russia and Ukraine in fertilizer production. A decrease in fertilizer production will bring about a decrease in agricultural productivity, especially in underdeveloped countries. Source: FAO, 2022, p.3

Until the onset of the COVID-19 pandemic, there were positive developments in reducing global poverty. However, the onset of COVID-19 has led to a renewed increase in the poor. According to UNEP studies, 77 million more people have become poor since the start of the COVID-19 pandemic. With the outbreak of war, the phenomena mentioned above will increase the cost of living and cause poverty to grow. According to UNEP, in 2022, 95 million more people globally will struggle with extreme poverty due to the ongoing war in Ukraine (UNEP, 2022-a, p.10).

4. War, Climate Change and Turkey

Turkey is one of the countries expected to be most affected by climate change. The increase in extreme natural events (fire, flood, drought, etc.) observed in the country in recent years is a harbinger of what will happen with climate change (MGM, 2022). Therefore, Turkey has started putting climate change on its agenda recently. The adoption of the Paris Agreement in 2021 shows this new trend in Turkey (31621 Sayılı 7 Ekim 2021 Tarihli Resmi Gazete). The EU's implementation of the European Green Deal also has an impact on this trend in Turkey. In the Medium Term Program (31589 Sayılı 5 Eylül 2021 Tarihli Resmi Gazete), the European Green Deal is directly referenced and the impact of this strategy on the global market is mentioned. Turkey should develop green policies if it wants to integrate into this market. However, this war, which started in a region close to Turkey, will affect Turkey and the green policies that Turkey wants to implement for various reasons.

Foremost among these reasons is the environment. In the past years, there has been a disaster like Chernobyl and as a result, the amount of radiation on Turkey's Black Sea coast increased seven times (Özgün, 2018, p.161). Similar to this bad experience, the emergence of a situation such as the shooting down of nuclear facilities in the region will again cause negative consequences for Turkey. Like other countries in the region, Turkey would be affected by radiation leakage. Turkey will be one of the most affected countries if Ukraine and Russia use chemical and nuclear weapons.

The second issue is related to energy. Turkey is one of the countries dependent on foreign energy and Turkey imports 65% of the energy it needs from Russia (Erturgut and Seven, 2021, p.43). The escalation of the war will lead to an imbalance in the energy market, increasing energy prices. Energy is an important input in industry and agriculture and an important element for households for heating purposes. The economic consequences of an increase in energy prices will be severe. In a study, UNEP stated that countries in the region, including Turkey, will face energy and financial challenges (UNEP, 2022-b, p.19).

There are concerns about food in the same way as about the environment and energy. War will bring a rise in food prices and a disruption in the global food chain. In 2020/2021, Turkey imported nearly 87% of its wheat from Russia and Ukraine (TOB, 2022). As a country importing grain from Ukraine and Russia, Turkey can't be unaffected by the war. A problem in foreign trade due to the war will negatively affect low-income households, which allocate most of their income to food.

Finally, according to UNEP (2022-a), approximately 20 million people leave their countries yearly due to climate change. Turkey is one of the countries on the migration routes of refugees for various reasons. According to UNHCR (United Nations High Commissioner for Refugees) estimates, the number of refugees in Turkey is 4 million, making it the country hosting the largest number of refugees (UNHCR, 2022). While Turkey is already dealing with migration problems, the intensification of the war in Ukraine may direct new migration flows to Turkey¹¹. This will lead to new economic, social and political imbalances in Turkey. In the coming years, the spread of the climate refugee phenomenon¹² due to climate change, combined with wars, will inevitably lead to serious problems. This situation will create a weakness in Turkey's struggle against climate change.

5. Conclusion and Assessment

The most negative feature of war is undoubtedly its human dimension. Because while many people lose their lives due to wars, many also have to deal with various physical and psychological problems. Another problem that may arise from wars is the destruction of cities' houses, infrastructure, public buildings and industrial facilities. Such destruction will lead to decades of economic decline for that country. With the outbreak of the Ukraine-Russia war, these problems have been rightly discussed for a long time in world public opinion. In addition, the EU-centered discussions centered on the war's financial and partly energy supply aspects. Clearly, all the problems mentioned above are important and require urgent solutions. However, within the scope of this study, unlike these important and urgent aspects of the war, the relationship with climate change has been addressed.

As is known, one of the most important consequences of climate change is seen on the environment. While the global temperature rises due to increasing carbon emissions, ecosystems

11 According to UNHCR data, the number of Ukrainian refugees in Europe exceeded 7 million as of 30 August 2022. The number of Ukrainians in Turkey is estimated to be 145 thousand. Source: UNHCR Data, 2022

12 If climate change makes the return of people who have left their homes impossible due to the consequences it creates, this causes the phenomenon of climate refugees. In 2020 alone, more than 30 million people left their homes for reasons related to climate change. It is estimated that the number of global climate refugees may be higher as some climate refugees are displaced within the country. Source: EPRS, 2021

are destroyed due to extreme natural events. It should not be forgotten that wars cause similar results because military mobilization is one of the most important reasons for increased carbon emissions. Moreover, the consequences of wars are not only related to carbon emissions. Damage to nuclear facilities in a country like Ukraine, which has large nuclear facilities, will cause undesirable global consequences. In addition, war will cause other negative consequences, such as the destruction of ecosystems, reduced biodiversity, and increased waste harmful to the environment and human health.

Another issue where war and climate change intersect is energy. The world has been discussing the fight against climate change in organizations such as the Glasgow Conference. In order for the fight against climate change to be carried out successfully, all countries at the global level will need to actively participate in this struggle. The polarization of the world due to wars will make this struggle a failure. As it is known, the EU has long been at the forefront of the fight against climate change and has concretized these efforts with the European Green Deal in 2019. However, a war in the region will reduce the chances of success of the steps taken by the EU. Because the EU will turn to countries other than Russia to get the energy it needs, this will increase the EU's carbon emissions. In addition, the EU will resort to outdated and excessively carbon-emitting sources such as coal, increasing emissions at a high level.

On the other hand, countries like India, China and Japan will take advantage of the opportunity created by the war to procure cheaper energy from Russia. This would increase their carbon emissions and increase their dependence on fossil fuels. If the EU's coal use increases, these countries will reduce the EU's sanctioning power on climate change.

Another important issue in the relationship between war and climate change is food. Russia and Ukraine play a critical role globally, especially in grain production. Moreover, a contraction in the energy supply from Russia will reduce agricultural production in countries that import energy from Russia. Therefore, continuing the war between these two countries will cause major problems in the global food supply. Especially for households in less developed countries, access to staple foods will become difficult. When the problem in global food supply and the increase in energy prices are considered together, it is estimated that an undesirable outcome, such as the growth of the poor global population, may occur.

For Turkey, similar consequences to those mentioned above are likely to emerge. As a country close to the war zone, Turkey is one of the countries that will be most affected by the environmental impacts of the war. In addition, Turkey has intensive trade relations with these countries in agriculture and energy. If the war continues, a decrease in the supply of agricultu-

ral products can be expected due to the intensive use of fossil fuels in agriculture. There will also be an increase in the prices of products imported from Russia and Ukraine and low and middle-income households will be affected. The war could have unintended consequences for energy because Turkey is highly dependent on imports of fossil fuels, especially natural gas. Rising energy prices will strain industrial production, agriculture and households in Turkey.

For the reasons mentioned above, all countries, especially those in the regions where the war is taking place, should try to end the war. In the 21st century, resources should be allocated to tackling all human problems, such as climate change, instead of wars. Strategies such as the European Green Deal, which have lost effectiveness due to the war, should be reconsidered according to post-war conditions. Finally, food and energy-based socio-economic problems should not be forgotten. Providing financial resources to low-income communities affected by the war would be a method that can be considered in this framework.

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CHAPTER 8

ENVIRONMENTAL RESPONSIBILITIES AND FUTURE PERSPECTIVE OF COMPANIES WITHIN THE SCOPE OF THE GLOBAL COMPACT

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ABSTRACT

The United Nations Global Compact is the largest corporate citizenship initiative and the most common voluntary responsibility project. This agreement also represents an organization that encourages companies to develop sustainable and socially responsible practices to spread a sustainable, common global development culture worldwide. The Compact sets forth ten fundamental principles in human rights, labor, environment, and anti-corruption. The companies party to the compact work to make these principles a part of their business strategies, activities, and culture. Three of these principles are under the environmental heading. According to this, “business support for precautionary approaches to environmental issues; to support all kinds of activities and formations that will increase environmental responsibility; It is envisaged to support the development and dissemination of environmentally friendly technologies.” Global responsibility sharing is achieved through the cooperation established by gathering all participants, including companies that adopt these principles, under the umbrella of the United Nations Global Compact to achieve sustainable development goals. Within the scope of the contract, 16,786 companies worldwide, a total of 20,690 participants; In Turkey, there are 405 participants, 151 of which are companies. Turkey’s local network of the Global Compact offers a development, sharing, and cooperation platform for the sustainable development of Turkey with its multi-stakeholder member structure that includes non-governmental organizations, universities, municipalities, and businesses that take responsibility for sustainable development. This study aims to highlight the environmental activities of companies in Turkey, identify the missing issues in sustainability studies on a universal scale, and make suggestions that will contribute to the circular economy with increasing environmental responsibility. In this context, a descriptive content analysis was conducted through the MAXQDA program. The findings were evaluated using the activities of Turkish companies within the scope of the United Nations Global Compact, in line with the said principles, and the activity reports and data prepared for these studies. According to the analysis results, various suggestions are made to the companies and other actors.

Keywords: United Nations Global Compact, Sustainable Development, Environment

Jel Classification: M10, Q01, Q56

1. Introduction

Environmental pollution, global warming and climate change are among the most important problems faced in today's world. Fighting these global environmental problems on a global scale also necessitates the responsibilities of individuals, companies and non-financial organizations. In this context, the United Nations Global Compact (UNGC), which brings organizations together globally, plays an important role.

This study aims to identify the work of the Turkish network on the environment by considering UNGC and to suggest solutions by identifying the deficiencies in this regard. In this study context, qualitative research is carried out through descriptive content analysis, and the missing points are highlighted in the aspects of the studies that are reflected in the reports. While considering the studies involved in environmental activities, the quantitative values of the companies within the scope of Global Compact Türkiye are determined and their progress is monitored. The reports' background and content are concretized with analyses and the missing aspects are emphasized. As a result, which actors are responsible for the steps companies should take in the future and what needs to be done.

2. United Nations Global Compact

UNGC, founded in 2000, is one of the world's largest voluntary corporate responsibility initiatives. As of November 2022, more than 21,000 participants are part of this social initiative. The idea underlying the UNGC aims to organize the participants of the business world and organize non-governmental organizations, and to realize ten universal principles in the fields of human rights, working standards, environment and corruption and also UN targets (e.g., Millennium Development Goals), including UN institutions and governments. The Global Principles Convention, which has significant support from the UN, has a wide geographical field in terms of its activities (Rasche et al., 2012: 7; Bremer, 2008: 227).

UNGC is carrying out local network activities in Turkey and 405 organizations are members of this local network. UN Global Compact Türkiye has been actively working since 2013, presenting and spreading the existing agenda globally with companies, non-governmental organizations, business associations and academic institutions. The main purpose of this local network is to support sustainable development in Türkiye. UN Global Compact Türkiye, which operates with the "Corporate Sustainability" theme, has been realized in cooperation with TUSIAD and TISK. The work of the Global Compact-Türkiye local network, which has a wide range of activity in the TUSIAD secretariat and grows daily, is its mission and vision. The vision of the mentioned local network is "to be a pioneer and an example in the world

with the strategies and approaches it has developed to ensure that the concept of responsible corporate citizenship and sustainable institutions become widespread in Turkey”. Its mission is to serve this vision is stated as “to support establishing a sustainable and inclusive global economy by collaborating with the private sector and other social stakeholders in Türkiye and internationally” (UN Global Compact Network Türkiye, 2022a).

The platform clearly states that they have adopted the ten (10) principles of UNGC after 2013 and what work they have done at the national and international levels in this context. It can be said that the platform, which is trying to achieve a rapid success rate on a regional scale, has come to the fore with its work on “women’s rights” and “sustainability”. These activities are carried out concerning four working titles covering ten principles. This systematic principle is universally accepted. It requires examining the United Nations Global Compact and other local networks in more than 70 countries to compare the work of the UN Global Compact-Türkiye.

2.1. United Nations Global Compact Domains

UNGC supports institutions and includes them in cooperation to establish and maintain the global economic order. To achieve this goal, it has been operating with its member businesses since 2000. These activities are shaped according to the four domains adopted by UNGC and the ten principles under these domains. These principles express the primary responsibilities that the business world must fulfill (Aracı Kazıcı, 2021: 368; Uğur, 2019: 2,3).

According to the statements of the Global Compact Network-Türkiye (2022) local network, the fields of human rights, labor standards, environment, and anti-corruption represent the four main areas in which UNGC works. In this respect, four domains and ten principles are presented in Table 1. Accordingly, a corporate social responsibility infrastructure is at the center of UNGC. The structure, which has grown with gathering voluntary organizations committed to fulfilling these principles, is characterized as a voluntary global governance agency. In this context, by revealing the ethical values of the global economy of UNGC, it offers a solution by providing global business standards to the area where nation-states cannot intervene alone and global governance gaps occur. For this reason, UNGC’s domains and ten principles are a universal convention that develops corporate social responsibility standards that encompass the business world (Voegtlin ve Pless, 2014: 179-182).

Table 1 <i>United Nations Global Compact Domains and Ten Principles</i>	
Domains	Ten Principles
“Human Rights”	“Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and.”
	“Principle 2: ensure they are not complicit in human rights abuses.”
“Labour”	“Principle 3: “Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining”;
	“Principle 4: the elimination of all forms of forced and compulsory labour;
	“Principle 5: the effective abolition of child labour; and.”
	“Principle 6: the elimination of discrimination regarding employment and occupation.”
“Environment”	“Principle 7: Businesses should support a precautionary approach to environmental challenges;.”
	“Principle 8: undertake initiatives to promote greater environmental responsibility; and.”
	“Principle 9: encourage the development and diffusion of environmentally friendly technologies.”
“Anti-Corruption”	“Principle 10: Businesses should work against corruption in all forms, including extortion and bribery.”
Source: (UN Global Compact Network Türkiye, 2022b).	

Organizations that want to join the UNGC must commit to improving universal principles. At the same time, they must comply with the principles and publish a report to show what they have done in one year. This report is the new progress reporting system called CoP (Communication on Progress). Companies or other organizations may progress in some of these principles in the equation of capital, political considerations, and social and environmental responsibilities while lagging in others. The development process of the companies takes part in reports (UN Global Compact Network Türkiye, 2022c). In the reports and evaluations, the control of compliance with these principles is carried out within the scope of four domains: human rights, labour, environment, and anti-corruption. With the impact of global climate change, one of the most striking domains of work of UNGC is the “environment.”

2.2. “Environment” Principles of the United Nations Global Compact

The Global Compact is a convention put forward to initiate a dialogue with the business world, based on the speech of the United Nations Secretary-General, Kofi Annan, at the World Economic Forum in 1999. It is expected that the UNGC, which was put forward to carry the UN to a more proactive role, support the Millennium Development Goals, and act as a global network, does not ignore the “environment”, the main field of work in this context.

Today's environmental problems impose responsibilities on both individuals and businesses. All organizations, especially businesses, must participate voluntarily in this responsibility to offer a more livable world to future generations. As is seen in Table 1, the principles under the environmental heading of UNGC, which is accepted as a voluntary corporate social responsibility initiative, are three: principle 7, principle 8, and principle 9. With a closer look at these principles, it can be said that they provide a roadmap for organizations on the environment. With reference to (UNGC, 2022a, 2022b, 2022c);

-“Principle 7: Businesses should support a precautionary approach to environmental challenges”;

Firstly, “Principle 7” is examined by considering the concept of precaution. Principle 15 of the Rio Declaration, indicates that; precaution should not be used “where there are threats of serious or irreversible damage, the lack of complete scientific certainty should not be used as a reason to delay cost-effective measures to prevent environmental degradation”. This direction includes the systematic implementation of prevention, risk assessment, risk management, and risk communication. Decision-makers need to take action and consider the degree of uncertainty that arises from scientific evaluation where there is a reasonable suspicion of harm.

From a business perspective, the key to the precautionary approach is the idea of prevention rather than improvement. In other words, it is more cost-effective to take action early to ensure that environmental damage does not occur.

Companies should take certain steps in line with this principle. These steps are listed below:

- Develop a code of conduct or practice for its activities and products that reaffirms its commitment to caring for the health and the environment.
- Develop a company guideline on applying the approach consistently across the company.
- Establish a management committee or steering group to oversee the company's implementation of measures, particularly risk management on sensitive issues.
- Engage in proactive, early-stage, and transparent two-way communication with stakeholders to ensure effective information about uncertainties and potential risks.

In this direction, organizations should support economic measures to protect the environment within the scope of the aforementioned principle and carry out their activities without using scientific uncertainties as an excuse to delay actions toward environmental problems.

-“Principle 8: Undertake initiatives to promote greater environmental responsibility”,

In the 30th part of Agenda 21, the 1992 Rio Earth Summit outlined the role of business and industry in the sustainable development agenda as follows: “Business and private sector should increase self-regulation, guided by appropriate laws, regulations and initiatives integrated into business planning and decision-making processes; should promote transparency and dialogue with employees and the public.”

The Rio Declaration states that businesses are responsible for ensuring that their activities do not harm the environment because society expects the business world to be good actors. Businesses gain legitimacy by meeting the needs of society, and society is increasingly expressing its demand for environmentally sustainable practices. In this context, steps that companies can take to promote environmental responsibility include the following:

- Define the company vision, policies, and strategies to include sustainable development (economic well-being, environmental quality, and social equity).
- Should develop sustainability goals and indicators (economic, environmental, social)
- Establish a sustainable production and consumption program with clear performance targets to move the organization beyond compliance over the long term.
- Work with product designers and suppliers to improve environmental performance and expand responsibility across the value chain.
- To achieve responsible environmental performance, it must adopt voluntary conventions, codes of conduct, and internal practices and sectoral and international initiatives.

-“Principle 9: Encourage the development and diffusion of environmentally friendly technologies.”

Environmentally friendly technologies, as defined in the Rio Declaration, Agenda 21, must protect the environment, be less polluting, use all resources more sustainably, recycle their waste and products more, and treat waste in a more acceptable way than traditional technologies. These are various cleaner production processes and pollution prevention technologies. In this direction, businesses need to turn to environmentally friendly practices, environmentally friendly products, and environmentally friendly technologies.

2.3. The Rio Declaration on Environment and Development

The Rio Declaration, which was put forward at the World Environment Summit convened in Rio De Janeiro, the capital of Brazil, presents the basic principles that countries related to environmental pollution must fulfill (Özcan, 2012: 256). One of the principles that refer to the

main areas of the Global Compact is the Rio Declaration, which forms the basis of the environmental heading. The preface of the Rio Declaration affirms the Stockholm Declaration and states that the Rio Declaration has been tried to be built on it. In this respect, the Stockholm Declaration contributes to the environmental heading of UNGC.

In short, the Rio Declaration on Environment and Development expresses the realization of sustainable development within the scope of 21 principles by prioritizing human life regarding the environment. For businesses that will realize sustainable development in the global economic conjuncture, putting these 21 principles into three basic principles with the global principles agreement and presenting them with a progress report under the name of CoP will allow more institutional progress in environmental studies.

3. Methodology

3.1. Purpose and Importance of the Research

This research aims to draw attention to the importance of a supervisory and supportive umbrella organization in the context of sustainability studies and to determine the activities that companies should perform in line with the principles set forth by this organization. In addition, it is aimed to reveal the conceptual background that expresses environmental responsibility in the annual reports and to show the development process with the examples presented in the annual report so that companies can see their situation and set an example for other businesses. Within the scope of the study, the position of the value given to the environment in the reporting of a business in Turkey is shown by word analysis, and the developments are evaluated periodically. Therefore, by observing the achievements and deficiencies of the enterprises in Turkey with the social responsibility approach in the UNGC, solutions are offered by considering all the actors according to the result.

3.2. Research Method

“Qualitative research method” was used in this study, which deals with the situation of companies under the environment domain of UNGC. However, there is a quantification in every qualitative research. For this reason, specific methods and analyses are used. Interviews, pictures, ethnographic notes, and texts from other sources can be coded through coders’ reasoning or mathematical algorithms. In this context, the data taken from the texts and sources are converted into quantitative data and interpreted. Content analysis is widely used in qualitative research. It can be organized into three approaches. These are linguistic analysis (nature and richness of vocabulary), syntactic analysis (verb tenses and tenses), and thematic

analysis (themes and frequency), which are used either complementary or separately, depending on the purpose of the research. Using qualitative data analysis software in the qualitative research method facilitates operational processes. NVivo® and MAXQDA® are among the best-known qualitative data analysis software (Oliveira, 2014: 72). Within the scope of this research, the MAXQDA program made descriptive content analysis, and the results became clear with word cloud analysis. The data gained more concrete and quantitative values with word analysis, in which the classification was made according to the frequency of the words. In addition, word clouds provide an understanding of the general composition of frequently used words in a given context. It allows researchers to review themes in a text to analyze individual or group narratives so that they can be used to illustrate key themes that emerge from the data (Williams et al., 2013: 45,46). Accordingly, the main themes of the reports are revealed and interpreted.

3.3. Findings

The number of participants who are members of the UNGC network is increasing daily, both in Türkiye and other parts of the world. As of October 2022, 405 organizations are members of UNGC in Türkiye. Those interested in the environment are listed under specific domains among these organizations. The topics covered within the scope of the environment are as follows: “caring for climate”, “climate ambition accelerator”, “responsible climate policy engagement”, “business ambition for 1.5°C”, and “carbon pricing champions”. Under these domains, businesses that fulfill environmental responsibility and operate in Türkiye are classified. These classifications have been prepared in light of the data on the web address where participants in the United Nations Global Compact are presented (UNGC, 2022d).

Table 2 <i>Companies Under the Title of Caring for Climate</i>		
Name of Organization	Sector	Joined On
Türkiye Garanti Bankası A.Ş.	Banking	24.04.2012
Tayburn Turkey	Media	03.08.2009
Aksa Akrilik Kimya Sanayi A.Ş.	Chemicals	19.06.2006
ARGE Consulting	Industrial Support Services	29.05.2002
There are four companies under the title of Caring for the Climate. The companies operate in different sectors and are ranked according to their date of participation.		

Table 3*Companies Under the Title of Climate Ambition Accelerator*

Name of Organization	Sector	Joined On
Arçelik A.Ş.	Household Goods & Home Construction	14.07.2021
Penti Giyim	Retailers	02.06.2021
Origin	Diversified	12.04.2021
Toyo Matbaa Mürekkepleri San. ve Tic. A.Ş.	Chemicals	22.03.2021
Yorglass	Chemicals	08.02.2021
Bant Boru San. ve Tic. A.Ş.	General Industrials	08.01.2021
Egemet Ege Metal Dövme San. ve Tic. Ltd. Şti.	Automobiles & Parts	08.01.2021
Eti Soda A.Ş.	Industrial metals and mining	10.12.2020
Kazan Soda Elektrik	Industrial metals and mining	10.12.2020
Mavi Giyim San. ve Tic. A.Ş.	Retailers	17.07.2020
Zorlu Enerji Elektrik Üretim AŞ	Electricity	20.04.2020
Akiş GYO A.Ş.	Real Estate Investment Trusts	31.12.2019
Türkiye Kalkınma ve Yatırım Bankası A.Ş.	Banking	16.09.2019
Tekfen Holding	Diversified	19.07.2018
Kordsa Teknik Tekstil A.Ş.	General Industrials	19.03.2014
Çimsa Çimento San. ve Tic. A.Ş.	Diversified	06.12.2013
Elif Plastik Ambalaj San. ve Tic. A.Ş.	Chemicals	05.07.2012
Anadolu Efes Biracılık ve Malt San. A.Ş.	Beverages	29.12.2011
Türkiye Sınai Kalkınma Bankası	Banking	19.05.2010
Yaşar Holding	Diversified	11.01.2008
Yeşim Tekstil San. ve Tic. A.Ş.	Personal Goods	28.09.2006
Koç Holding	Diversified	05.04.2006

Source: It was created by the researcher using the United Nations Global Compact Participants section.

There are 22 companies under the title of climate ambition accelerator. These include companies from different sectors, and their membership dates are listed from the most recent to the first.

Table 4*Companies Under the Title of Responsible Climate Policy Engagement*

Name of Organization	Sector	Joined On
Akçansa Çimento Sanayi ve Ticaret A.Ş.	Diversified	30.05.2014
Türkiye Sınai Kalkınma Bankası	Banking	19.05.2010

Source: It was created by the researcher using the United Nations Global Compact Participants section.

There are two companies under the title of responsible climate policy engagement. One of the Industrial Development Bank of Turkey (TSKB) companies works on ten principles, primarily the environment.

Table 5 <i>Companies Under the Title of Business Ambition for 1.5°C</i>		
Name of Organization	Sector	Joined On
Ford Otomotiv Sanayi A.Ş.	Automobiles & Parts	04.10.2021
Yapı ve Kredi Bankası	Banking	04.10.2021
Arçelik A.Ş.	Household Goods & Home Construction	14.07.2021
Uludağ İçecek Türk A.Ş.	Beverages	21.06.2021
Kordsa Teknik Tekstil A.Ş.	General Industrials	19.03.2014
Source: It was created by the researcher using the United Nations Global Compact Participants section.		

There are five companies under the title of Business Ambition for 1.5°C. The companies operate in different sectors and are listed by joining date.

Table 6 <i>Companies Under the Title of Carbon Pricing Champions</i>		
Name of Organization	Sector	Joined On
Şekerbank T.A.Ş.	Banking	11.04.2015
Türkiye Garanti Bankası A.Ş.	Banking	24.04.2012
Türkiye Sınai Kalkınma Bankası	Banking	19.05.2010
Source: It was created by the researcher using the United Nations Global Compact Participants section.		

There are three companies under the title of “Carbon Pricing Champions”; all are in the banking sector.

There is no institution from Türkiye under the “Sustainable Stock Exchanges Initiative” title to promote sustainable development. However, there are ten organizations from 10 different countries in this group. In addition, it is observed that examples of non-business structures from Turkey are not included in the title of Caring for the Climate. Under this title, there is only one non-governmental organization from the USA.

Only 31 of the 405 organizations included in the UNGC from Turkey are concerned with the environment domain. Four of these companies carry out activities by two or more of the environmental topics. TSKB fulfills its environmental responsibilities under the title of climate ambition accelerator, responsible climate policy engagement, and carbon pricing champion.

Global Compact Türkiye was established in 2013 and has published annual activity reports since then. The analysis of the last five years’ activity report (2021-2020-2019-2018-2017) is as follows:

According to the Global Compact Türkiye 2021 Activity Report:

- Global Compact Türkiye has 335 members, including 243 companies, 52 non-governmental organizations, 25 business associations, 13 academic institutions, and six others.

- Thanks to the number of signatories, Global Compact Türkiye ranks 8th in Europe and 1st in the Middle East and Eastern Europe.

According to the Global Compact Türkiye 2020 Activity Report:

- Global Compact Türkiye has 278 members, including 190 companies, 46 non-governmental organizations, 23 business associations, 14 academic institutions, and two others.

- Thanks to the number of signatories, Global Compact Türkiye ranks 8th in Europe and 1st in the Middle East and Eastern Europe.

According to the Global Compact Türkiye 2019 Activity Report:

- Global Compact Türkiye has 235 members, including 150 companies, 47 non-governmental organizations, 21 business associations, 13 academic institutions, and four others.

- Thanks to the number of signatories, Global Compact Türkiye ranks 8th in Europe and 1st in the Middle East and Eastern Europe.

The Business Plastics Initiative, established in 2019, is one of the important projects of Global Compact Turkey to take the fight against plastic pollution one step further. They also opened a separate title for the Business Plastic Initiative in their 2020 and 2021 reports.

In the 2019 Report, the main issue addressed under the title of the environment study area is pollution. This situation manifests itself in the statement in the report: “The Environment Working Group is leading the establishment of platforms that bring together the private sector, civil society, and academia by focusing on climate change, water, and plastic pollution issues in its activities for the period 2019-2022”. As stated in this statement, the latest studies of Global Compact Türkiye are on climate change and water pollution, especially plastic pollution.

According to the Global Compact Türkiye 2018 Activity Report:

- Global Compact Türkiye has a total of 225 members, including 138 companies, 46 non-governmental organizations, 21 business associations, 16 academic institutions, and six others.

- Thanks to the number of signatories, Global Compact Türkiye ranks 8th in Europe and 1st in the Middle East and Eastern Europe.

-While it is observed that there are studies under different titles for sustainable development in the 2018 Report, it can be stated that there is no direct environment title.

According to the Global Compact Türkiye 2017 Activity Report:

-Emphasizing that it is the third year of Global Compact Turkey, the total number of members is indicated as 256 in the report.

-Within the scope of their environmental studies, they emphasize that they are related to “Climate Change, Water and Water Security, Food and Agriculture”.

-The title of environment was not opened. In addition, only some working groups that prioritize sustainability were shared.

When the reports of Global Compact Türkiye are examined, it is seen that this voluntary structure has a constantly developing and institutionalizing system. Within the report’s scope, it is prominent that more studies have been carried out under the environment domain, and initiatives have been taken on specific issues in this direction. Global Compact Turkey publishes reports in institutions just as it publishes reports. Also, it is important to examine TSKB’s New Progress Report (CoP) system reports, which also come to the fore within the scope of the environment title.

The reports of TSKB, which are within the scope of Global Compact Türkiye, should be separated as before and after 2016. Because while the reports submitted before 2016 are handled under the title of TSKB CoP Reports, the reports prepared after 2016 are presented under the title of TSKB Integrated Activity Report in a more institutional and broader framework (TSKB, 2022). In addition, when we look at the reports prepared by TSKB after 2016, it is observed that the emphasis on sustainability is high.

The emphasis on environmental activities in TSKB’s reports between 2016 and 2021 has been examined in the context of “environment, climate, and sustainability” codes. In this context, the number of these concepts in the reports is presented in Table 7.

Table 7 <i>Industrial Development Bank of Türkiye’s (TSKB) Integrated Reports and Codes Under the Environment Title</i>			
Report Dates	Environment	Sustainability	Climate
TSKB 2021 Integrated Report	210	348	128
TSKB 2020 Integrated Report	170	267	137
TSKB 2019 Integrated Report	120	175	59
TSKB 2018 Integrated Report	111	150	39
TSKB 2017 Integrated Report	106	133	22
TSKB 2016 Integrated Report	118	112	19
Source: It was created by the researcher			

The most repeated word in TSKB's integrated report for 2020 is "financial" and the concept of sustainability has lagged. The report, which includes many explanations for sustainability and green activities, brings the financial concept to the forefront as the bank addresses the issue of capital and evaluates economic developments. At the same time, the loans offered by TSKB to support the principles it has adopted, the responsible banking principle, and the consolidated reports it publishes increase the intensity of these concepts.



Figure 3. TSKB 2019 Integrated Report Word Cloud

The most repeated word in TSKB's integrated report for 2019 is "financial" and the concept of sustainability has lagged. Loans for environmental projects and the annual consolidated reports of the institution stand out more.



Figure 4. TSKB 2018 Integrated Report Word Cloud

The most repeated word in TSKB's integrated report for 2018 is "financial," and the concept of sustainability has lagged. In addition to capital and finance, concepts such as energy also appear in the background.

of sustainability has increased from 2016 to 2021, the concept of sustainability has remained in the background in word cloud analysis due to the increase in the intensity of other concepts, especially financial.

4. Conclusion and Recommendations

As a result of the work carried out within the scope of Global Compact Turkey, the success of the local network in the region of Turkey stands out with the number of participants and signatories. It is observed that the platform in question, established in 2013 and whose reports after 2016 were examined, has been growing rapidly and institutionalizing day by day. However, the number of companies signing initiatives under the environmental domain of the platform corresponds to a figure of 7-8% among Turkish enterprises. This result shows that the number of enterprises undertaking environmental responsibility is low. For environmental, corporate, and especially future economic sustainability, companies that are members of the platform today need to be involved in more environmental activities.

TSKB is the largest signatory of environmental initiatives in many areas, and the last six years of the reports to be published within the scope of membership have been examined. As a result, environmental code and word cloud analysis has been revealed. Based on the above analyses, it was determined that first of all, in 2016, awareness was raised in the field of environment, and the events that developed in the context of Turkey were effective; and in 2016 and 2017, it was found that the awareness on this issue was increased in the enterprises and the climate issue was realized. When the analyses are examined comparatively, the word cloud analysis remains in the background while the awareness and studies on the environment increase because the projects related to the environment and the loans and support for these projects come to the fore. Due to the environmental support provided by TSKB and the fact that it is the first privately funded Turkish development and investment bank in UNCLOS, TSKB's sustainability and renewable energy issues have come to the forefront. At the same time, economic inputs have become more prominent. In this context, it can be stated that it is important in the recent economic crises. For sustainable development, supporting the studies in this context and the awareness of sustainability is necessary. The studies also offer certain projects and funding systems for sustainable development in the decisions taken in climate activities worldwide. The economic structure is assumed to be important due to the number of companies in the banking sector included in the UNGC and their support for environmental studies. Word cloud analysis is also supportive in this context.

In the analyses made within the research scope, it is observed that Türkiye is successful

in the region regarding the number of companies participating in the UNGC. It is important to increase this success on a global scale. However, the low number of companies in the environment domain indicates that companies need improvement in this regard. For this reason, businesses in Türkiye need to do more work in the field of environment. Since more companies from Türkiye must participate in global activities and strengthen their place in the global network, the Global Compact Türkiye local network should increase the businesses that it will add to its network by doing more work. It can provide awareness-raising activities by cooperating with businesses and non-governmental organizations on the environment. In addition, by sharing exemplary studies with other organizations, especially TSKB, and by transferring the support of organizations in this context, the number of companies under the environment domain can be increased by 7-8%. For this purpose, businesses should be encouraged to increase environmental responsibility. At the same time, both the Global Compact Türkiye local network and the state institutions and non-governmental organizations that provide this basis have important duties in the environmental responsibility topic. Firstly, Global Compact Türkiye should be more visible on environmental issues and offer applications to mobilize businesses. Although it is a voluntary organization, its existence has become a necessity. With this awareness, governments should develop a strong network between non-governmental organizations, businesses, and universities. It is important for the state to be supportive in this regard and to create policies that will contribute and provide a basis for cooperation that supports environmental development. Finally, it is important for academics and future researchers to raise environmental awareness and for companies to address the dimensions of fulfilling environmental responsibility with an umbrella organization. In this context, researchers can fill the gaps in the field by working within the framework of corporate social responsibility, capital forms, and economic development.

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CHAPTER 9

THE DYNAMICS AND CONSEQUENCES OF GERMANY'S GREEN ECONOMY POLICIES: AN OVERVIEW AND CRITIQUE

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ABSTRACT

In this study, an overview of Germany's green economy policies is presented from a critical perspective. After a general evaluation of green economic policies, the history of Germany's green economic policies is presented, and the steps taken in this direction in recent years are evaluated. Finally, the dynamics of these policies are investigated, and their effects are analyzed. In the study, a critical analysis of these processes, which are mainly evaluated through the energy transformation, which is referred to as "*Energiewende*" in Germany, is conducted.

Keywords: Green economy, Germany, Energiewende, Sustainability

Jel Codes: Q28, Q48, Q58

1. Introduction

Concepts such as green economy, environmental policies, struggle against climate change, sustainable development are concepts that we frequently encounter in the contemporary world and are presented to us as goals that must be adopted and worked for with their “positive content”. Goals such as the protection of natural resources and the search for clean energy sources to prevent the ecological destruction caused by industrial society are, no doubt, the priorities of today’s world. However, making analytical and critical assessments of the causes and consequences of problems and alternative solutions to problems should also be considered as a priority in order to produce genuine and effective policies.

Germany, an industrialized country, is one of the leading countries that has adopted green economy and sustainable transformation policies as a political priority and has acted in this direction. Therefore, Germany has been chosen as a case study in this study. Germany has a long historical heritage of green policies and has been taking decisive steps in the last years of our century. In this study, a critical evaluation of these policies of Germany is made. The aim of the study is to evaluate the background of Germany’s green policies, to convey what kind of steps have been taken in this direction and to make an accounting of these policies by evaluating the results of these policies from a critical perspective outside the mainstream environmentalist approach.

In this context, the first part of the study provides a historical overview of green policies, outlining the phenomenon we are discussing and how it has come to the present day within this framework. Basic legal regulations and some international policies are mentioned and the evaluation of these developments in Europe as well as the criticisms put forward are presented. In the second part, the history of Germany’s green policies is presented directly, and the steps taken in this framework in recent years are presented. Thus, the change in the nuclear energy policy, the new targets, and the energy crisis in connection with Russia are evaluated. In the third and final section, the various effects of the dynamics and consequences of the policies on the German economy are analyzed and the effectiveness of these policies is discussed. As a result, it is concluded that Germany’s green economic policies are neither sufficiently effective nor sufficiently environmentally oriented.

2. Green Transformation, Concepts, History, General Criticisms

Today, the green economy is generally considered within the concept of sustainability. However, the concept of green economy has a long history within the framework of conducting economic activities in line with an environmentalist perspective and ensuring that

economic activities do not harm the ecosystem. The purpose of economic activities is defined as meeting numerous needs with the help of scarce resources, and the purpose of economic science is presented as determining the necessary instruments to realize this objective. In this context, achieving maximum benefit with minimum damage to the ecosystem while conducting economic activities finds its place in the history of economics as an environmentalist and sustainable economic approach.

Although this objective constitutes the logical basis of the economy, excessive profit-based economic activities have led to deviations from this logic throughout history. For this reason, in the late twentieth century, discussions on environmental economics came to the agenda. The concept of green economy was first used in 1989 in a report to the UK government (UN, 2022). In 1992, the Earth Summit was organized where the green economy would become a sub-heading of the concept of sustainable development and this issue was addressed at the international level (UN, 1992a). It is noteworthy that this summit was organized immediately after the end of the Cold War. After the collapse of the Soviet Union in December 1991, the Western bloc was freed from the Soviet threat and acquired new agendas.

Green economy refers to a socially inclusive economy with low carbon emissions and high resource efficiency according to the United Nations standard (UNEP, 2023). In order to build such an economy, methods such as taxation and the addition of public expenditures are mainly used. The conceptualization of the green economy under the umbrella of sustainability is conceptualized within the framework of the United Nations Sustainable Development Goals. Accordingly, the objectives of the green economy are based on four of the Sustainable Development Goals that the United Nations enacted in 2016: Good health and well-being; Peace, justice and strong institutions; Climate action; Responsible consumption and production. In the past, however, there have been some major setbacks to the implementation of green economy policies at the global level.

On the way to the widespread adoption of green economic policies, the first concrete international step towards climate change was the “United Nations Framework Convention on Climate Change (UNFCCC)”, which was opened for signature in 1992 and entered into force in 1994 (UN, 1992b). The Kyoto Protocol, signed in 1997 as part of this convention, is an international agreement that includes more concrete provisions to combat climate change and global warming. The Paris Agreement was signed in 2015 under the UNFCCC in order to clarify and make transparent the responsibilities imposed on states in order to realize the goals within the scope of this struggle. Lastly, a new objective for Europe has recently come into force. The European Commission, the executive body of the European Union, has put forward

a set of policies to neutralize Europe in the context of global warming and climate change, and this set of strategies has been adopted as the “European Green Deal” (EUR-Lex, 2019). The main goal of the policies in this agreement is to reduce Europe’s carbon emissions about 55% by 2030 and to achieve Europe’s status as the world’s first carbon-neutral continent by 2050.

Europe is aiming for a series of industrial transformations, in particular the transformation of energy sources and their use, to neutralize carbon emissions in the interest of ecological sustainability. However, there are also criticisms of these goals and the related policies. In fact, some states are skeptical of these policies, arguing that a total transformation of the economic infrastructure in line with these projected goals would weaken their economic power. For instance, countries heavily dependent on coal for their energy use, such as Poland, the Czechia and Hungary, oppose the agreement on the grounds that eliminating coal would increase unemployment and weaken competitiveness (Worland, 2020). According to 2022 data, Poland ranks second in coal production in Europe, behind Germany. While Germany leads only with lignite coal, which has much lower carbon emissions, Poland mines both lignite and hard coal (Eurostat, 2023).

Another topic of debate on the green transition is the place of nuclear energy in the green economy. The European Green Deal defines nuclear power plant investments as “green and sustainable economic activity”. The main reason for this attitude is that nuclear power plants account for 25% of electricity generation within the European Union (Eurocom, 2023). As a matter of fact, countries that make intensive use of nuclear power plants in energy production tend to define nuclear energy as green and sustainable. Countries such as Bulgaria, Czechia, Slovakia, Slovenia, and France, in particular, use nuclear energy at quite high rates (Euronews, 2023). While these countries are in favor of defining nuclear energy as eco-friendly, countries such as Germany, Austria, Denmark, Portugal and Spain oppose the production of electricity from nuclear energy and do not support its inclusion in the green category. On this point, Germany only takes a stance in favor of the use of natural gas.

Germany’s decision to shut down its nuclear power plants, switch to natural gas for the majority of its energy supply and embark on the Nord Stream project with Russia followed the Fukushima nuclear power plant accident in Japan in 2011. Germany made such a decision citing the safety of nuclear power plants and set out to change its energy infrastructure. While safety concerns seem to be a plausible justification for shutting down nuclear power plants, in our opinion, these safety concerns are more likely to be geopolitical conflicts than the Fukushima accident. The 2008 war between Russia and Georgia has signaled that Russia will pursue an aggressive foreign policy in the future. The possibility that the escalating geopolitical

struggles in the Caucasus could soon threaten Europe was reaffirmed by Russia's invasion of Ukraine in 2022. Germany has taken a series of defense measures due to its geographically indefensible territory and the disadvantage of being directly threatened by Russia. At this point, the shutdown of nuclear power plants and the move towards commercial cooperation with Russia seem to explain these changes in energy policies.

Finally, another dimension of states' skepticism towards green transformation is related to the principle of sovereignty. Various commercial regulations, especially tax policies to be implemented for the implementation of these green economy policies, are proposed by the European Commission. In other words, there exists a centrist policy implementation process. The fact that the European Commission takes an imposing position on an issue that will so fundamentally affect the socio-economic structure of states is interpreted as the Commission stealing power from states (Europarl, 2019). In other words, there exists an opposition to this agreement on the grounds that it is contrary to the sovereignty of nation states.

3. The Green Policies of Germany

As mentioned above, while there are various initiatives on green economy and sustainability initiatives at the global level, states also have their own specific policies in this framework. In Germany, the acceleration of green politics as a political movement coincided with the 1970s. However, the environmental movement gave its first outputs as a civil activism with the influence of the increasing youth movements in the post-war period (Sarkar, 1986: 221). In the 1970s, the Greens became a mass movement and became an alternative social liberal movement by setting the opposition to nuclear armament, which was one of the main agendas of the Cold War, as their main objective, and separated themselves from the authoritarian political agenda of Eastern Bloc socialism. In 1980, the "Green Party" was founded and thus the political address of the environmental movement in Germany emerged. In 1993, the party merged with the "Alliance 90 Party" in East Germany and became the current "Alliance 90/The Greens Party". In German politics, parties establish close relations with civil society through various foundations. The civil society component of the Alliance 90/The Greens Party is the Heinrich Böll Foundation, which has international offices in 34 different countries (Heinrich Böll Stiftung, 2023).

However, the historical development of green policies in Germany does not start with the Green Party. Various ecological policies can be found in the reconstruction process of the Federal Republic of Germany (commonly known as West Germany) after the Second World War. However, it should be noted that Nazi Germany, also known as the Third Reich, also pos-

sessed such policies before the war. In 1935, “The Reich Nature Protection Law (RNG)” was enacted, which included various provisions and strict measures to protect nature and species (Closmann, 2005: 20-21). At first sight, it might be difficult to find a correlation between the Nazis and green policies. Nevertheless, this coherence is justified on the basis of the logic that nature, i.e., the homeland, should be used in a manner befitting German society and that the ecosystem should be able to serve society in perpetuity (Closmann, 2005: 26-27).

The first environmentalist policies in West Germany after the war were carried out within the chemical industry. The chemical industry played a key role in the reconstruction of war-torn Germany. In this context, the federal government took a series of measures against these companies in the 1950s and 1960s to address the problem of chemical waste resulting from the overproduction of famous chemical companies in the production and waste management processes (Jones & Lubinski, 2013: 16-20). Another sector that played a vital role in the reconstruction of Germany was the energy sector. Initially based on the coal industry, the energy sector diversified with the commissioning of the first nuclear reactor in 1961, and the nuclear-based energy sector became a critical element of German development. While there were some reactions against nuclear energy during this period, a stronger public opinion in favor of the utilization of nuclear power plants emerged after the 1973 oil crisis (Hake, Fischer, Venghaus & Weckenbrock, 2015: 534). At present, Germany's green transformation policy is mainly driven by the energy sector and this process is referred to as the “*Energiewende*”.

The period when nuclear energy began to be questioned more vociferously was the 1980s. There have been some discussions that Germany might turn to cleaner and cheaper alternative energy sources in the future, and after the Chernobyl nuclear power plant accident in 1986, the environmental movement and nuclear skepticism increased. Since the 1990s, with the end of the Cold War, the global environmental awareness that has been mentioned above has increased and Germany has started to act on climate change in line with this trend. During this period, even though there was a consensus on climate change policies in German politics, the utilization of nuclear energy has continued to be a controversial issue. After the election of Angela Merkel as Chancellor in 2005, the discussions on the use of nuclear energy continued until the turning point in 2011, while the action plans for climate change persisted and the search for sustainable, green energy as an alternative pursued.

After the 2011 Fukushima accident, there has been an immediate backlash against nuclear power plants in Germany. This reaction in the press and media has been swift and harsh compared to France and the United Kingdom, which derive most of their energy needs from nuclear power plants (Hake, Fischer, Venghaus & Weckenbrock, 2015: 542). In our opini-

on, this situation indicates that, based on the hysteria caused by the Fukushima accident, anti-nuclear energy pressure groups quickly created the necessary public opinion, and the targeted transformation of the energy infrastructure finally became possible. In this context, the denuclearization process, which had continued gradually and with various setbacks, was completed in April 2023 with the decommissioning of the last three remaining nuclear power plants. As an outcome of Germany's green policies, according to the Renewable Energy Country Attractiveness Index (RECAI) of 2023, Germany surpassed China for the first time and ranked second in the world in renewable energy performance. At this point, initiatives such as increasing investments in the solar photovoltaic sector and opening a tender for offshore windmills have been effective (EY, 2023).

Thus, what kind of policies does Germany's green transformation and "*Energiewende*" encompass, starting with the break in 2011 and continuing to the present day? A comprehensive legal regulation envisaging the policies to be carried out in this context was enacted in 2014. "The Renewable Energy Sources Act (EEG)" of 2000 was reviewed in 2014. This revision envisaged an increase in renewable technology investments. The same legislation was updated once again in 2017. The most important change in this amendment is the abandonment of the "uniform pricing" model in favor of the "pay-as-bid" model for electricity pricing. This development has provoked a backlash, as studies have shown that the pay-as-bid model is not as efficient a pricing system as the other option (Willems & Yu, 2022: 20). Therefore, there have been various reactions to this regulation, especially from the industrial sector.

As a result of the mentioned regulations, the share of renewable energy in electricity generation rose to 33.3% in 2017, while the use of lignite coal was 22.5%, hard coal 14.1%, natural gas 13.2% and nuclear energy 11.7%. In the distribution of renewable energy, wind energy, photovoltaic/geothermal energy, hydropower, biomass, and municipal waste have the highest shares, in that order (BMWK, 2023). Finally, the omnibus law passed in 2022, popularly known as "The Easter Package", set objectives such as doubling the country's renewable energy capacity, dedicating 2% of the land mass to wind energy capacity, and reducing the burden on businesses and consumers by abolishing transformational surcharges (Andreae, Ruttloff, Kindler, Topf & Löhdefink, 2022: 1).

An important element of the projected goals is that funding is to be allocated for green hydrogen energy production and hydrogen-based electricity storage projects. This hydrogen energy produced from renewable resources does not emit carbon emissions during the separation process. One of the countries where green hydrogen can be obtained at minimum costs is Namibia, a former colony of Germany, which is particularly rich in natural resources. For

this purpose, a joint communiqué was signed between Germany and Namibia in 2021 to establish a green hydrogen partnership. Thus, it is aimed to establish a green hydrogen center in Namibia with the financing to be provided by Germany. Germany estimates that a kilogram of hydrogen from Namibia will cost an extremely low amount of 1.50 to 2 Euros (BMBF, 2021).

4. The Dynamics and Consequences of Germany's Green Policies

We have explained above the connection between the radical acceleration of green policies in Germany in 2011 and Russia's aggressive foreign policy. However, gas imports from Russia remained a significant share of total gas imports from 2011 to 2013, declining in 2014 and then rising thereafter (Westphal, 2020: 417). However, following the war in Ukraine, gas imports gradually declined, and finally, as of September 2022, Russia completely cut off gas supplies. Therefore, in order to overcome the resulting energy supply crisis, the federal government has compulsorily activated coal-fired power plants. The important point here is that the federal government, in order not to go back on its denuclearization policy, only activated coal-based power plants, which have higher carbon emissions compared to nuclear power, instead of nuclear power plants. However, the closure of nuclear power plants was also postponed during this process.

The cut-off of Russian gas had a direct negative impact on the German manufacturing industry. This is mainly because natural gas is the main source of energy used in the petrochemical sector. Since petrochemical outputs are used to support the rest of the country's manufacturing industry, the supply disruption in this sector directly affected the entire German industry (NY Times, 2022). Thus, although the share of green energy in the German economy has increased, fossil fuels are still the main source of energy for industry. Indeed, as a result of the domino effect of this energy crisis, German industrial production continues to shrink. (Destatis, 2023). As a consequence of this energy crisis and contraction, companies tend to leave Germany. The main possibility for German companies is to move to the US, supported by the "Inflation Reduction Act" (Reuters, 2023a).

While energy-intensive sectors such as metallurgy, paper, ceramics, and glass are facing emigration or closure due to the industrial production crisis caused by the energy crisis, the federal government's green policies are also having such effects. The federal government intends to make it mandatory for residential heating systems to be renewable based from 2023, as well as banning gasoline and diesel-powered vehicles from the road by 2035 (The Guardian, 2023). For this reason, automobile, transportation, and logistics sectors are among the sectors planning to increase their investments in the US. This plan of the federal govern-

ment is opposed by the Free Democratic Party, one of the government partners, on the grounds that it would destroy the German manufacturing industry. It is worth mentioning at this point the use of coal, which, along with natural gas, occupies an important place among the fossil fuels that feed German industry. As mentioned above, the majority of coal use in Germany is lignite, and despite its relatively low carbon emissions, lignite-based energy production is not tolerated in order to save the economy from the difficult situation it is in.

In this regard, we can argue that the German government, while realizing the green transformation plan, both did not make an alternative plan against possible disruptions and the steps it took during the emergency period contracted the economy. Therefore, an unstable, shrinking, and fragile economic structure has emerged due to the crisis in the manufacturing industry. Consequently, the contraction of the economy and the relocation of firms to other countries, such as the US, fed each other, resulting in a vicious circle. To break this cycle, Robert Habeck, Vice Chancellor and Minister for the Economy and Climate Change, announced that the federal government would subsidize the energy costs of companies operating in energy-intensive sectors, with a plan to allocate 4 billion Euros annually (Reuters, 2023b). Thus, based on the fact that Germany's energy consumption decreased by seven percent in the first half of 2023 and the economy contracted, it is possible to conclude that sustainable energy policies have been ineffective.

One of the pillars of the energy crisis caused by Russia's action is the problem of energy storage. As mentioned above, Germany intends to solve this problem through a green hydrogen center to be established in Namibia. In fact, in order to get maximum efficiency from electricity storage technology, it is lithium that is used. However, Germany does not prefer lithium, which has high carbon emissions, in order to reach the "net zero"¹ objective set by its green policies (Tedesco, 2023). In addition, almost the entire world's lithium reserves are located in Australia, Argentina, Bolivia, China, Chile and, with the latest discovery, Iran, regions that are neither historically nor currently in Germany's political sphere of influence. For this reason, a green hydrogen production partnership was established with Namibia, a former German colony, and hydrogen, whose storage efficiency is much lower than lithium, was identified as the best option.

It is clear that the mentioned initiatives and transformation policies come at a cost. Both the renewal of existing technologies and the fact that these green energy sources are not efficient enough in the midst of the energy crisis increase these costs. Indeed, Habeck's emphasis

1 Net zero simply means that a net amount of greenhouse gases produced is equal to the amount of natural greenhouse gases that the earth can absorb.

on state subsidization sufficiently confirms this. Therefore, at this point, taxation is seen as the main way to eliminate these costs. However, due to the economic conditions in Germany, the federal government provides tax exemptions to industrial firms in order to protect their ability of competitiveness in international markets, to prevent their outflow from the country and even to prevent them from going bankrupt (Reuters, 2023c). As a result of tax exemptions for the industrial sector, the cost of the ongoing energy transition is passed on to households, primarily through electricity bills. In other words, in the name of protecting companies by subsidizing them, households are being billed for the crisis. However, studies show that it is industry, not households, that intensively produces the carbon emissions targeted to be reduced by the federal government. In contrast, tax exemptions for industrial companies are passed on to households, distorting income distribution to the detriment of low-income and middle-income households (Ploeg, Rezai, Tovar, 2021: 26-32).

Another assessment that can be made about these regulations is their impact on income distribution as well as the increase in energy consumption across the country by firms benefiting from tax exemptions. A study on the effects and consequences of tax exemptions offered to industrial firms to encourage their use of green energy while maintaining their competitiveness in international markets provides surprising evidence. Accordingly, tax exemptions do not have a significant impact on the production, export, and employment levels of these firms. There was no significant impact on such outputs, and firms' energy consumption increased further following the exemptions (Gerster & Lamp, 2022: 19-23). Thus, the tax exemptions offered to industries in order to maintain green policies and to protect the competitiveness and production capacity of the German manufacturing industry create a socioeconomic burden and prevent energy savings at the same time. Therefore, it is possible to claim that the policies implemented by the federal government do not actually serve the goal of sustainability at all. As a matter of fact, if Germany's current "*Energiewende*" policies are continued in their current form, it is considered unlikely that the objectives set out will be realized within the specified timeframes (Stefes, 2016: 83-85).

5. Conclusion

Although its historical background goes back much further, green economy policies gained momentum in the post-Cold War period. Green economy policies, which came to the agenda with the aim of eliminating the problems created by the industrial society and the dynamics of the Cold War process in the ecological framework, found a place in the political agendas of governments. As one of the leading countries in the green movement, Germany, Europe's main industrial giant, has been making progress in integrating green transformation

into the economy, starting with energy policies. The concept of a green economy as a necessity for a sustainable future is recognized at the governmental level and even imposed on society as a must. However, the effectiveness and dynamics of these policies are controversial. The *Energiewende*, the main pillar of the green economy model, seems to have triggered Germany's energy crisis and economic stagnation in general. The repercussions on German energy policy, mainly due to the security concerns created by Russia's current foreign policy, have made it a priority to get rid of natural gas, while the immediate closure of nuclear power plants and coal-based power plants has led to a nationwide energy supply crisis as an attempt without infrastructure. Indeed, Germany had to restart its coal-fired power plants after the recent natural gas shortage. However, as explained before, the federal government does not cite a rational explanation for its decision to shut down lignite coal-based power plants, which have lower carbon emissions than hard coal, instead of gradually shutting them down in parallel with the gradual transition to clean energy.

One of the problems facing the German economy is the subsidization of companies operating in the manufacturing industry, which tend to shift their production away from Germany as a result of the economic difficulties in the Eurozone, particularly energy costs. The fact that these subsidies are met through taxation of households and that this method is legitimized as a necessity of green transformation is a matter worth questioning. As an extension of the crisis of neo-liberalism, the fact that the bill for Germany's difficulties is being blamed on lower and middle-income citizens suggests that the dynamics of green economic policies are different from the general belief. As described earlier, if, as hypothesized, the need for a green and sustainable economic model is vital, the main reason for this necessity is the classical economic model and the economic agents acting within this model. More precisely, it is the industrial sector that uses energy resources to the fullest extent. However, the unsustainability of the industrial sector threatens the German economy. Therefore, within the framework of the green transformation concept, the economic burden is placed on households and the policy is legitimized by the threat of the climate crisis.

One of the main criticisms of Germany's green economic policies is the question of efficiency. Due to its geographical location, Germany is not a country rich in solar resources. That is why the envisioning of solar energy as one of the country's main energy sources is still a matter of debate in terms of efficiency. This is because it is still not possible to state that there is a scientific consensus on which of the two will dominate the cost of photovoltaics as opposed to the return of solar energy. As for the energy storage problem, there are two controversial aspects of the green hydrogen station project in Namibia. First, the efficiency of

energy storage with the use of hydrogen seems to be a lesser evil, as detailed above. Secondly, Germany's realization of this project in Namibia, a former colony of Germany, highlights the debate on neocolonialism. Because concerns are expressed that the land use rights that Germany will obtain with this project will lead to natural resource exploitation and land grabbing. In this context, the fact that green economic policies are handled as an excuse stands out as the main argument of this debate.

As a result, the effectiveness of the green economy policies adopted as a way to overcome the difficulties of the German economy is seen as inadequate, and the possible results are not evaluated positively. It is unlikely that this policy, which the federal government claims will be beneficial in the long run, will save the German economy from the economic bottleneck, and it is expected to deteriorate the standard of living of households and the fairness in income distribution. However, it is also important to note that these criticisms should not be interpreted as a suggestion that the use of clean energy should be abandoned. The point emphasized here is that more transparent and detailed studies on the effectiveness of green energies should be conducted and presented to the public with the same transparency. In addition, the exclusion of nuclear energy, which was adopted as clean energy in the Green Deal, from the *Energiewende* agenda is also a point that needs to be discussed. Thus, this brings up the suspicion that these energy transition policies are the result of non-nuclear energy lobbying and that a capital transfer is the main objective in this way. Accordingly, for the sake of the German economy and the general welfare of German society, the recommendation is that Germany's energy supply should be supplemented by nuclear energy, which is defined as clean energy under the Green Deal, and wind energy from wind energy-rich regions. Otherwise, it seems likely that the current policies will continue as a means of wealth transfer in the form of environmental dogmatism and the German economy will continue to shrink.

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CHAPTER 10

LEGAL AND SOCIAL EFFECTS OF GREEN ECONOMY POLICIES ON LABOR MARKETS

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ABSTRACT

The green economy is a concept that is increasingly important today. This concept is not only limited to environmentally friendly policies but also has profound effects on labor markets. This chapter takes a labor economics perspective to understand the complexity of the green economy and its interaction with business. This perspective offers a broader understanding of the green economy by covering not only the balance between economic growth and environmental sustainability but also workforce dynamics. The first part of the chapter examines the complex relationship between sustainability and business, explaining how the green economy is reflected in workforce dynamics. Understanding the effects of the green economy on business requires an in-depth evaluation of employees' roles in business life, skill sets and employment opportunities. In this context, it is necessary to clearly determine the conceptual framework. For this purpose, in the first part, the concepts of green employment and green jobs have been tried to be explained. The second part analyzes in depth the effects of technological developments brought by the green economy on labor law. How automation, artificial intelligence and green technologies change the workforce structure is examined in detail. The potential effects of this technological transformation in terms of workers' rights and occupational safety in the workplace are meticulously discussed. The fact that innovative technologies have led to a powerful transformation in labor markets emphasizes the key role of labor law in the process of adapting to this change. The chapter considers the new occupational fields and skill sets created by the green economy and evaluates how the labor market can adapt to these changes. In this context, it is emphasized how education and retraining policies should be shaped by the demands of the green economy. Adapting the workforce to these changes can contribute to the creation of a more sustainable working model in the future business world. As a result, this chapter evaluates the legal and social effects of green economy policies on labor markets from a broad perspective, providing important clues about the challenges and opportunities that the business world will face in the future. As the green economy shapes the transformation in the business world, it offers guidance for the construction of a sustainable and fair economic future.

Keywords: Green economy, Labor Law, Labor Market

1. Introduction

Starting from 1970, industrialized nations realized that the energy shortages brought on by the 1973 and 1979 oil shocks were a challenge to their material success, which was built on the heavy use of natural resources. As a result of this recognition, climate change and other environmental problems have become the focus of attention around the world, and many studies have been conducted investigating the consumption of energy, the use of renewable resources in economic development, and sustainable development. The 2008 crisis of finance brought the economic development model back to the agenda by taking advantage of new opportunities based on social and environmental sustainability. The recent surge in environmental concerns can be attributed to a variety of initiatives, policies, and investments aimed at conserving the environment. Different parties such as governments, corporations, and universities often prepare programs whose titles begin with the word “green”, indicating environmental friendliness (Asnawi and Djatmiko, 2015, p. 175). The term “green,” although somewhat vague, denotes the aspiration to render the economy more ecologically responsible and enduring by emphasizing overall production and consumption while minimizing or eliminating any adverse environmental impact. (Winter and Moores, 2013, p. 1). Efforts about the development of the green economy and green jobs have been increasing in recent times, giving rise to countless reports and studies in this field. Business and labor market transformation is at the core of a green economy. The success of a green economy relies on the entrepreneurial skills to respond to market needs, the spread and adoption of new technologies, and labor market policies that support employees and employers (Pociovălișteanu, et.al., 2015, p. 9242).

In the study, firstly, green growth, green economy and green jobs will be discussed within a conceptual framework. Then, in the second part, the effects of green employment policies on the labor market and labor law will be discussed.

2. Conceptual Framework

In recent years, there has been an increasing awareness, both in the political sphere and among the general public, about reducing the environmental impact of human activities. The recognition of the increasing degradation of natural systems has resulted in the development of policies to mitigate and adapt to climate change, which has become increasingly prominent in certain regions of the world (Martinez-Fernandez, Hinojosa and Miranda, 2010, p. 6).

Current environmental and economic problems have led to the emergence of concepts such as “green growth”, “green economy”, “sustainable production and consumption” and “sustainable development”, especially green employment and green jobs.

2.1. Green Growth and Green Economy

Increasing resource use and deteriorating ecological balance due to rapidly increasing industrial production and increasing globalization have begun to be seen as a threat to the survival of future generations. The current development model, which causes global warming, envisages excessive use of natural resources and creates environmental destruction, has been subjected to intense criticism on the grounds that it is not sustainable. The idea that sustainable economic development should be attained by forging connections between economic growth, the enhancement of human health, social equity, employment preservation, and environmental protection takes center stage (Pociovălișteanu, et al., 2015, p. 9232). To struggle these effects, the concepts of green growth and green economy were introduced.

Green growth is the promotion of economic development that takes into account the conservation of natural resources (OECD, 2011, p. 4). Today's industrial revolution is often referred to as the green growth transition, because it is expected to have a significant structural effect on labor markets (Bowen, et al., 2018, p. 263).

The green economy emerged from the sustainable development approach. The green economy model aims to achieve economic development by prioritizing the environmental dimension. The idea of a green economy was initially introduced in 1989 by famous economist David William Pearce, who contends that the economy and the environment cannot be seen in isolation (Gea and Zhib, 2016, p. 258). It is used to express an economy where energy and natural resource consumption is as low as possible and where effective use of natural resources results in higher welfare, better jobs, more productivity, and increased social participation (Pociovălișteanu, et.al., 2015, p. 9234). United Nations Environment Programme (UNEP) (2011) very briefly defines the green economy as an economy that increases human well-being and social equality while greatly reducing environmental and ecological risks. The green economy is a sustainable economic system that minimizes the production of pollutants and waste, optimizes the utilization of energy, water, and materials, cherishes the natural world and human life, and provides decent employment opportunities (Martinez-Fernandez, Hinojosa and Miranda, 2010). The green economy encompasses the reduction of fossil fuel consumption, the reduction of air pollution and greenhouse gas emissions in the manufacturing process, the improvement of energy efficiency, the recycling of materials, and the development and implementation of renewable energy sources (Dierdorff, et al., 2009, p.8). A green economy means an economy in which production and consumption activities are carried out with much less energy (Eren and Denniss, 2010, p. 25)

It is widely accepted that the green economy is the primary means of achieving economic growth and job creation through the optimal utilization of energy and resources, environmental conservation, and the utilization of renewable energy sources in energy production (Tănăsie, et al., 2022, p. 2)

2.2. Green Employment and Green (Collar) Jobs

There is no global definition of a green job. There are multiple perspectives on green jobs. One perspective sees them as roles within industries engaged in environmentally responsible processes such as waste management and recycling. Another viewpoint focuses on the products and services that contribute to environmental protection and the individuals involved in their production or distribution. Alternatively, one can consider green employment as part of industries encompassing numerous companies dedicated to environmental initiatives, such as the production of energy-efficient devices, filters, or wind turbines (Consoli, et al., 2015, p. 7).

In Germany, to exemplify, green jobs include occupations that contribute to goals such as environmental and resource protection, sustainable use of nature, recycling, etc., but exclude jobs that are largely unrelated to environmental regulations, such as marketing, trade, or IT. For France, ‘eco-activities’ include all activities concerned with the production of goods or services to preserve the environment or manage resources sustainably (CEDEFOP, 2019, p. 24).

Green (collar) jobs can be defined in a variety of ways, including the following definitions:

- Green jobs are high-quality employment opportunities that promote the preservation or restoration of the natural environment, regardless of whether they are in established industries or new green industries (ILO, 2016).
- Green jobs are jobs that help protect the environment, keep ecosystems and biodiversity healthy, and use less energy, materials, and water (UNEP, ILO, ITUC, IOE, 2008, p. 3).
- The green-collar job market offers a variety of high-quality and cost-effective employment options that are intrinsically linked to the protection or improvement of ecological health and safety (Apollo-Alliance, 2008, p. 3).
- According to the U.S. Bureau of Labor Statistics (BLS), green jobs encompass both positions in companies that manufacture products or services that are beneficial to the environment or conserve natural resources, as well as positions where employees’ responsibilities include optimizing their company’s production processes for environmental sustainability (Winter and Moores, 2013, p. 20)

- According to the United States Department of Labour, green jobs involve activities that promote environmental sustainability, such as decreasing carbon emissions and increasing the production and/or utilization of energy, while also offering sustainable family incomes, health and pension benefits, and fair working conditions and these jobs are open to workers of all racial, gender, and ethnic backgrounds (Martinez-Fernandez, Hinojosa and Miranda, 2010, p. 17).
- Jobs that reduce and renew the destruction of the environment, aim at sustainable development, and also offer employees a decent work environment, career and wage opportunities, and include practices on issues that are important today, such as occupational health and safety, are defined as green jobs (Azazi and Uzma, 2022, p. 94).
- Green jobs are any employment opportunities that have been created, replaced, or redefined as a result of the shift to a more environmentally friendly economy (Poci-ovălișteanu, et al., 2015, p. 9234)
- Green jobs are those that focus on the preservation of natural resources or ecosystems, the reduction of pollution, the reduction of waste or energy consumption, and the reduction of carbon emissions (Cleary and Kopicki, 2009, p. 1)

As seen above, while some definitions only include jobs in green industries and industries that produce eco-friendly products and services, other definitions look more broadly at green jobs and include green supply chains (Borel-Saladin and Turok, 2012, p. 4).

The O*NET database, which contains occupation-specific data, distinguishes between three distinct categories of green jobs, based on the duties, competencies and expertise that the role will necessitate (Bowen, et al., 2018, p. 264):

- **Green New & Emerging** — Green economy activities and technologies are having a disruptive effect on the workforce, leading to the development of new occupations with distinct work styles and job responsibilities.
- **Green Enhanced Skills** — Green economy activities and technologies are having a disruptive effect on the work and worker needs of existing occupations.
- **Green Increased Demand** — Green economy activities and technologies increase the demand for jobs, but they do not change the work and need for skilled workers. (O*NET Resource Center)

Green jobs are considered to be very important in green growth and sustainability. Figure 1 shows how green jobs, the green economy, and sustainable growth work together. Green jobs help the economy grow by making production and consumption more eco-friendly. This means people will be more conscious of the environment and change their ways of doing things. This will lead to more eco-friendly activities, which will mean more people living in a cleaner, healthier, and more productive environment (Pociovălișteanu, et.al., 2015, p. 9236).

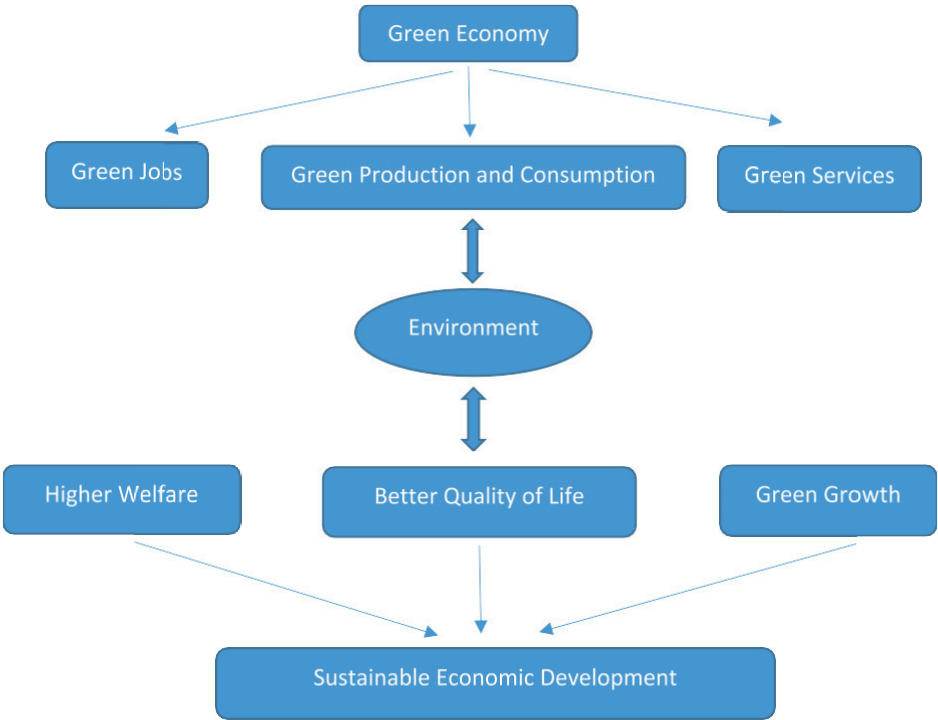


Figure 1. The relationship between green economy and sustainable economic development
Source: Pociovălișteanu, et.al., 2015, p. 9236

3. Effects Of Green Employment Policies On The Labor Market

While the adoption of green employment policies may result in reduced job opportunities in traditional sectors, international organizations like UNEP and ILO assert that a green economy will generate millions of new jobs and promote greater social equality (Gea and Zhib, 2016, p. 257).

UNEP assumes that the implementation of climate change legislation and the movement of the economy toward more sustainable development will affect the labor market in at least four ways. First, in some cases, new jobs will be created, for example in the production of

pollution abatement equipment to be installed on available production facilities. Second, jobs will be changed – for instance, from fossil fuel to renewable energy, or from manufacturing trucks to manufacturing rail cars, or from landfill and waste disposal to recycling. Third, jobs will be lost – without direct replacement – such as when packaging materials are out of date or banned and discontinued. Fourth, many existing jobs seem to simply be changing and being re-defined as “green” jobs, skills and profiles (UNEP, ILO, ITUC, IOE, 2008, p. 3).

Within a green economy, it is believed that certain sectors offer abundant employment prospects. These sectors can be classified as (Reyhan and Duygu; 2015, p. 21; Pociovălișteanu, et al, 2015, p. 9235)

- renewable energy,
- energy-efficient buildings, transportation and industry
- public transport
- resource-intensive production
- waste management and recycling
- sustainable agriculture, forestry, fishing
- environmental services.

4. Effects of Green Employment Policies on Labor Law

Awareness of reducing the damage caused by production and service processes on nature (green policy idea) began to increase after the 1960s (Özer, 2001, p. 176). This idea, which started to find a place in politics in the late 1970s, became a set of policies accepted at the international level and for which various steps were taken towards its implementation, only with the Montreal Protocol on Substances that Deplete the Ozone Layer dated 1987. Subsequently, the United Nations Framework Convention on Climate Change, adopted at the UN level in 1992, and the Kyoto Protocol, adopted within the scope of this agreement in 1997, laid the foundations of international legislation that will ensure that states reduce the damage to the climate.

Although a Green Economy includes many concepts, the concept it is based on is sustainability. When the concept of sustainability is used in the context of a green economy, the first thing that comes to mind is environmentalism and environmentally compatible growth policies (Reyhan & Duygu, 2015, p. 24). Production and growth in harmony with nature are the basic issues within the green economy, but what is meant by being at peace with nature is

not to change current consumption habits and make people consume less. The aim here is to develop a new economic model that people are accustomed and to which the current economic systems can preserve their existence (Tangian, 2007, p. 7). For this purpose, intensive use of technology is envisaged. Therefore, the effects of the green economy approach on labor law need to be considered in the context of the effects of technological developments on labor law. In this way, it will be possible to prevent the issue from being taken out of context and the opinions expressed on the issue so far will not be ignored. Likewise, will contribute to raising awareness in terms of recognizing the ways of cheating against the law by putting forward nice-sounding and unobjectionable concepts such as environmentalism and living in peace with nature, which are described as “greenwashing” (Pedersen & Andersen, 2023; Ekstrand & Nilsson, 2011, p. 167).

Employment strategies are of great importance for the implementation of green economy policies. In this sense, the “green jobs” mentioned by former US President Obama (Bomberg & Super, 2009, p. 426) give some clues about the direction in which these strategies are intended to be developed. According to the definition made by the American Bureau of Labor Statistics; Jobs that are based on producing or providing services that are beneficial to the environment and where processes are planned that require employees involved in the production processes to be environmentally friendly or use less natural resources are among the green jobs (Bureau of Labor Statistics, 2023). According to this definition, it is not possible for thermal power plants used in energy production or research methods used in mining to be among green jobs. Because in these works, there is an intensive use of raw materials and an intense intervention in the order of nature. While there is no debate that these and similar jobs, which are not environmentally friendly, are not included in the green jobs category, there is also no consensus on what green jobs exactly mean (Goods, 2011, p. 48). For example, it is not clear whether hydroelectric power plants or nuclear power plants, which have no apparent negative impact on the environment, are considered green jobs. Nuclear power plants, the number of which was planned to be reduced by the EU because they were not among the environmentally friendly energy types, were again accepted among the environmentally friendly energy types and their reduction was abandoned due to the fluctuation in energy prices as a result of the Ukraine-Russia war (Gönültaş, 2023).

In addition to macro-scale examples such as energy production, there is no generally accepted test as to whether micro-scale works and production processes are “green” or not. For example; Although at first glance the raw material inputs and fertilizer use in a greenhouse with soilless agriculture are significantly less than in classical agricultural production, it invol-

ves an intense intervention in the natural process, as the genetics of the seeds are changed and the products are differentiated from the originals, making them more suitable for industrial production. The “green” criterion, which can vary depending on the point of view, does not provide a clear measurement of which jobs are or should be in the green jobs category.

When we look at the practice, it seems that what is meant by green jobs is hidden in the concept of “sustainability”. Businesses that contribute to sustaining the existing structure by using technology intensively, without the need to change existing consumption habits and the general economic order, are considered within the scope of green jobs and are considered worthy of support and development (Tangian, 2007, p. 7). Therefore, even if methods that are fully in harmony with nature are used in production or service processes if they are insufficient to meet the needs of the society, that is, if they are not sustainable, they cannot be included in the category of green jobs.

This being the case, shifting employment to green jobs or creating new green jobs becomes a necessity of the envisaged “new” economic system. Although such jobs, where technology is used extensively, are described as environmentally friendly and sustainable, it should be carefully considered whether these concepts are a manifestation of the effort to conceal the changes in the labor market and to keep developments in favor of the employer in employee-employer relations. Considering how technological developments were used to shape the labor market in the period before the emergence of the concepts of green economy, green business, green employment and the effects of this on working life, especially on labor laws that determine the legal framework of employment, it is understood that these concepts are part of a different goal behind what is shown (Liu, Tan, & Zhang, 2021, p. 8).

The effects of technological developments on labor law have been the subject of many studies and have been addressed from many aspects. Green jobs do not constitute a new and different problem area in terms of labor law. What is new is the language used. The way technology is used in a way that prevents employees from exercising their rights and even prevents employees from accessing these rights in the first place constitutes an important problem area. Particularly in recent years, increasing practices in Türkiye aimed at eroding the dependency element of the employment contract (flexibility, employing seemingly independent employees, etc.) show that technological developments do not always produce positive results for employees. In the following headings, this relationship and its consequences will be discussed in the context of individual and collective labor law and whether green jobs have new or different effects.

4.1. Effects on Individual Labor Law

The most challenging aspect of labor law for employers is that, in addition to the costs required to do business, the laws introduced to protect employees create additional costs (Çiçek & Öçal, 2016, p. 128). For this reason, when employers want to expand their businesses or save money, they first look for ways to save on labor costs.

Technology is among the most effective tools used by employers to achieve these goals. Rapid developments in communication technologies have made labor laws in certain business lines very difficult and complicated. There is no doubt that technological developments and policies implemented under the heading of green economy and green employment will have effects on both individual and collective labor law in the long and short term.

4.1.1. Short Term Effects

When we look at the content of green jobs, which are considered mandatory within the scope of the green economy, it is seen that some existing sectors and business models will either disappear or become technology-intensive (Goods, 2011, p. 48). In this context, legal disputes regarding the termination of the employment contract will constitute a priority problem area in terms of labor law. Due to the change in work organization, the same job will be able to be done with fewer employees, or workplaces will shrink significantly. As a result, the termination of the contracts of existing employees and the rights claims that this will result (in addition to the notice, seniority, wage receivables that they may demand due to the termination of the employment contract, whether the disputes will be resolved through mediation or before the courts, etc.) are among the main areas of interest of labor lawyers in the short term. This issue, which does not require the development of any new conceptualization or new understanding in terms of labor law, will be important in terms of the workload that may arise depending on the speed of development of the transition to the green economy or the technological opportunities that will enable it.

The relevant provisions in Labor Law No. 4857 (Art. 6/V, Art. 29/I, Temporary Article 10) set an example in terms of protecting the rights of employees and determining the limits of employers' use of their termination rights. The basis of the transition to a green economy lies in the opportunities provided by technological developments. Technological changes and their consequences in terms of labor law have been the subject of investigation for many years. In this respect, the current regulations will be sufficient to resolve disputes related to labor law that may arise in the short term as a result of the transition to the green economy. However, if lawmakers establish laws that will eliminate the loss of rights that employees will experience

due to the creation of green jobs and facilitate this transition, the transition to a green economy will naturally become easier.

The most important thing to consider when making possible legal regulations is to realize that the main motivation for the transition to a green economy is not limited to environmental concerns, as claimed. The fact that cost concerns are also an important driving force and that employees need the social protection offered by the state more than ever in the face of this force should not be ignored.

4.1.2. Long Term Effects

4.1.2.1. Change in the Basic Concepts of Labor Law

The use of the basic concepts of labor law in a way that frees up employees paves the way for technological developments to become a phenomenon that benefits employers more than employees. Concepts that form the basis of labor law, such as employee, workplace, employer, occupational health, and safety, are now being redefined. Considering the example of Türkiye, the contents, and meanings of these fundamental concepts, which have constantly changed after the 80s when the economy opened up to the outside world, are incompatible with their contents and meanings before the 80s. This situation manifests itself most clearly in the concept of the workplace.

Labor Law No. 1475 (Art. 1/II), enacted in 1971, and Labor Law No. 4857 (Art. 2/II), enacted in 2003 with a delay as a result of long discussions, contain the same wording in terms of workplace definition. On the other hand, the statement “The workplace is a whole within the scope of the business organization created by the places, attachments and tools connected to the workplace” (Art. 2/III) included in Law No. 4857, reveals the change that concept of workplace has experienced in the intervening period and the need created by this change. With the widespread use of remote working methods, this statement had to be added to the text of the law to solve the difficulties experienced in determining the workplace. Communication technologies have made the work of employees no longer limited to a certain place. Especially in office jobs, employees can do their work anywhere other than their main workplace where they can connect to the internet. The remote working practice, which was mostly preferred by banks during the Covid-19 epidemic, is the most obvious example of this.

In addition to office jobs, where all production processes can be done remotely, jobs such as food delivery and motor courier work, a significant part of which can be planned within this scope, constitute an example of the expansion of the content of the workplace concept.

Companies whose main business is food delivery, whose market share and accordingly the size of the organisation has been increasing in recent years and which operate through digital applications, can serve their customers without the need for their employees to visit the workplace in any way with the business organisations they have established.

Change in the concept of workplace; It is defended based on claims that employees can work more freely, this increases job satisfaction, and employees can spend more time with their families. Research has yielded results that support these claims, as well as results to the contrary (Niebuhr, Borle, Börner-Zobel, & Voelter-Mahlknecht, 2022, p. 4). It is possible to state that remote working methods will enable you to reduce or eliminate costs arising from the workplace; However, when taken together with the employer's obligation to ensure occupational health and safety, it will be seen that working remotely has the potential to cause much more costs than working in the workplace. Although no comprehensive research has yet been conducted on the reason, many private institutions that quickly implemented remote working during the Covid-19 period, probably for the stated reason, ended this practice at the same speed and invited their employees to work at the workplace, as the bans were lifted in the post-epidemic period. Considering the occupational health and safety obligations of employers, the practice of remote working creates great uncertainty. Although it has not yet been the subject of Supreme Court decisions in Türkiye, there are examples in Europe where employers have been sentenced to pay financial and moral compensation due to occupational health and safety problems experienced by remote employees (Kanzenbach, 2020, p. 20; Horton, Cameron, Devaraj, Hanson, & Hajkowicz, 2018, p.10)

Another issue that causes more fundamental changes than the change in the concept of the workplace is the change in the dependency element of the employment contract. Those who are removed from the workplace and whose working time and hierarchical order are made unclear It has become questionable whether employees are dependent on the employer in the next step.

Employers, who have been trying to achieve flexibility for many years with their efforts to become flexible, but have not been able to achieve their goal of avoiding their responsibilities arising from this law because they still cannot get out of the scope of the Labor Law, no matter how flexible the employment relationship is, have overcome this problem thanks to the developments in communication technologies. In this context, the flexibilization trend, which started with classical working styles such as part-time employment contracts and out-sourcing work, has gone one step further thanks to communication technologies that enable the employee to be reached at any time and anywhere. The classical working style,

which was based on working in a full-time, fixed and fixed workplace, which emerged after the Industrial Revolution, has been replaced by flexible working models. Although flexible working models, which are diversifying day by day, were relatively sufficient to meet the need until the 70s, when the globalization trend accelerated, increasing global competition led employers to find more definitive solutions. The idea that the definitive solution sought can be achieved not by methods that aim to soften Labor Laws, such as flexibilization practices, but by completely bypassing the Labor Law, has gained significant ground thanks to the developments in communication technologies. Digital platform-based business organizations, which are an important tool of the idea in question and whose use has been increasing in recent years, have considerably weakened the dependency relationship between employees and employers. As a result, it has become very difficult to distinguish who is an employee and who is a self-employed. Problems regarding the determination of the existence and degree of dependency relationship between employer and employee, have already been a matter of debate for many years, especially in developed countries such as Germany, England, and the USA, and where solutions have been tried to be found through the development of various tests, have become even more inextricable. This situation, which has led to the emergence of the category of “quasi employee” whose legal status cannot be precisely determined, who is - so-called- independent but much more dependent on his employer than an employee, has made the most basic concept of labor law, “employee”, quite controversial.

4.1.2.2. Change in the Scope of Labor Laws

As a result of the weakening of the element of dependency, the concept of employee has become unclear and new concepts such as “quasi employee” have emerged, requiring a re-evaluation of the scope of labor laws that aim to protect the working class in need of social protection.

The need for social protection of employees has given rise to the principle of employee protection, which is one of the basic principles of labor law. The principle of employee protection aims not only to protect a person just because he is an employee but also to meet employees’ need for physical and mental protection against the difficult working conditions they are subject to.

The growing working class that emerged after the Industrial Revolution constituted the main driving force in the creation of labor law and employment laws. The inhumane working conditions that the working class is exposed to have forced lawmakers to make legal regulations shaped around the concept of employee (Çelik, Caniklioğlu, Canbolat, & Özkaraca,

2022, p. 5). The concept of employee has preserved its content in a working environment where working methods have not changed for many years and the factory or mass production model maintains its existence. Therefore, the laws fulfilled their functions and provided social protection to a significant segment of society.

In the 20th century, when technology developed rapidly and its effects on working life were felt intensely, the established order in working relations began to change significantly. A new working class has emerged that cannot be categorized as employees within the framework of labor laws, but that needs social protection at least as much as employees, considering their working conditions (Mollamahmutoğlu, Astarlı, & Baysal, 2022, p. 1).

This new class, called the precariat (Standing, 2020, p. 11), is employed in much harsher and more precarious working conditions than employees, using various motivational tools, without having any social or legal security. Members of the precariat, whose income is or has the potential to be relatively higher than employees, have still not been covered by the labor law, despite the working conditions they are subject to and the need for social protection they feel. Because precariat members have not made any serious claims until now, assuming that they own their jobs, do not enter into an employee-employer relationship with the people for whom they work, and therefore are responsible for their social protection (Standing, 2020, p. 16).

Considering that the main purpose of labor law stated above is to protect the working class in need of social protection, even though it is not within the framework of the concept of an employee in labor laws, it should also include employees belonging to the precariat class as a matter of justice and logic. It is essential to identify very well the negative effects on employees of the legal infrastructure of new ways of working not being fully established yet or the use of some existing contract types to circumvent the law. Otherwise, the problems of precariat members arising from insecurity will gradually grow and become an important social problem with the increase in the number of employees in this category.

If it is limited to the current concept of employees drawn by the laws, the issues aimed to be solved by labor laws will be ignored. In this regard, it is inevitable to include the social protection needs of workers - whether employees or not - into sustainability, which forms the basis of green business. Green jobs should be shaped not with the motivation to employ fewer employees with the opportunities provided by technology, but with the motivation to create jobs that are both in peace with nature and ensure living in humane conditions.

4.2. Effects on Collective Labor Law

The trade union and the collective bargaining agreement, which constitute the two main pillars of the collective labor law section of Labor Law, play very important functions in the self-protection of workers, especially employees. The disadvantageous position of employees vis-à-vis their employers is eliminated thanks to trade unions and collective bargaining agreements that provide the opportunity for collective action. When the historical process is examined, it is seen that employees can claim many rights and get results through collective actions (right to collective bargaining, right to rest, etc.) (Turgay & Çelik, 2022, p. 958). This reality has often been considered a threat to employers, and efforts have been made to prevent employees from taking collective action and to create relevant policies.

These methods, also called de-unionization policies and containing many different elements, are used more effectively with the opportunities provided by technology (Yıldırım & Uçkan, 2010, p. 167). It seems that the framework presented by green employment policies can also be used to support de-unionization policies. It is clear that green employment policies, which envisage shifting employment from sectors where unionization rates are still high to sectors where they are low, will contribute to de-unionization targets (Christensen, 2014, p. 154). However, it would be useful to apply the solution approach offered to eliminate the negative effects of green employment policies on employee-employer relations at the individual level. Removing the concept of sustainability from a purely economic framework and turning it into a consideration of human needs will contribute to the solution of possible problems in collective labor relations.

4.2.1. Short Term Effects

It is not possible to isolate the short-term effects of green employment policies in the field of collective labor law from their effects on individual labor relations. Closing workplaces or changing work areas and scopes will lead to the termination of employment contracts, and therefore, the number of employees in workplaces who are unionized and protected by collective bargaining agreements will decrease (Orhan & Savuk, 2014, p. 19). Although Labor Laws contain provisions protecting unionized employees, the fact that employers are allowed to close their workplaces or lay off employees as a result of technological developments makes it significantly difficult to act collectively in countries such as Türkiye, where unionization is subject to certain thresholds and its levels are limited (Mahiroğulları, 2001, p. 164).

Although it depends on the course of implementation, considering ongoing employer behavior, green employment policies will likely affect the primary dismissal of unionized

employees in the short term. In this regard, reinstatement cases and union compensation claims will be among the priority examination subjects of the courts. Likewise, whether the thresholds are exceeded in the conclusion of collective bargaining agreements and the policies employers will implement to prevent this will also be the subject of a lawsuit.

The possibility that members of the precariat may also make claims for rights in the short term should not be ignored. As seen in Türkiye, the increasing actions of self-employed and seemingly independent trade couriers in the period after the Covid-19 epidemic are the clearest example (Yazıcıoğlu & Karabulut, 2022) of this. In addition to the union rights of professionals such as couriers who need social protection but cannot effectively use their unionization rights, collective bargaining demands will also be within the scope of labor law.

4.2.2. Long Term Effects

Since the 1960s, the awareness and legislation at national and international level have had a significant impact on the labour markets of countries. The promise made by Barack Obama during the US presidential election process to increase the number of people employed in green jobs is the most concrete example of this. Although the desired success has not been achieved in the implementation of this promise (Sullivan, 2012),the issue of green employment is becoming increasingly important on the country’s agenda.

It is possible to examine the effects of green employment policies on collective labor relations through the change in trade union membership rates. In line with green employment targets, it is seen that the desired labor transfer from non-green jobs with high unionization rates to green jobs with low unionization rates has a decreasing effect on trade union density in countries. This situation is seen when we look at the trade union density in the USA, Japan, Germany, England, and France, which are among the top five countries in terms of economic size among the countries party to the Kyoto Protocol.

Table 1: Unionization Rates in the First Five Countries with the Largest Economy and Parties to the Kyoto Protocol					
Countries	Years				
	2000	2005	2010	2015	2019
USA	12.9	12.0	11.4	10.6	9.9
Japan	21.5	18.8	18.4	17.5	16.8
Germany	24.6	21.5	18.9	17.6	16.3
United Kingdom	29.8	28.6	26.6	24.7	23.5
France	10.8	10.5	10.8
Source: (OECD, 2023)					

Unionization rates in all of these countries except France have decreased over the twenty years. There was no decrease in France, where data was last obtained in 2016 (10.8%). During the same period, unionization rates in Türkiye were measured as 12.5% in 2000, showed a downward trend until 2013 (6.6%), then started to increase after this year and was finally measured as 9.9% (OECD, 2023). Therefore, it is obvious that Türkiye is also included in the downward trend in unionization rates, as in the USA, Japan, Germany, and the United Kingdom. Of course, it would be misleading to claim that only green employment policies had an impact on this recorded decline. However, when the encouraging effects of green employment policies on technological transformation are considered, it will be appreciated that these policies contribute significantly to the decrease in unionization rates.

The long-term impact of the decline in unionization rates on collective labor relations and the law regulating them will manifest itself as the laws regulating the legal framework of collective relations in the de-unionized labor market become obsolete. This problem will be solved by eliminating the issues that make it difficult for employees to benefit from the social protection mechanisms provided by trade unions. For example, in Türkiye, the Trade Unions and Collective Labor Agreement Law art. The “principle of uniformity in trade union membership”, implemented by Article 17/III, prevents employees working in more than one workplace with part-time employment contracts from becoming members of different trade unions in the same line of business. The regulation in question, which creates problems in terms of exceeding the thresholds stipulated in the collective bargaining agreement, seriously restricts the unionization rights of people who can work for different employers through platforms.

Facilitating and encouraging people who have the right to unionize but do not have the right to make a collective bargaining agreement or who are prevented from exercising this right by various means, to make a collective bargaining agreement will ensure that many social problems that are likely to be experienced will be solved at the initial stage. Removing the restrictions on collective labor agreements is the first step to be taken in this sense. A collective bargaining system consisting of only two levels (workplace and branch of business) as in Türkiye will not be sufficient in the face of changing labor relations.

5. Conclusion

The world is facing many environmental problems, i.e. global warming in recent years many of which are due to human activities. Environmental threat and its consequences that humanity has started to experience have increased awareness among both politicians and

the general public about reducing the effects of human activities on the environment. This increasing awareness has brought about the concept of sustainability in economic development. Within the framework of sustainable development, the concepts of green growth, green economy and green jobs have emerged.

The green economy, which integrates environmental and social dimensions of economic development, means an economy in which not only natural resources are used effectively but also increased wealth, better jobs and social inclusion are provided. In the implementation of the green economy, green jobs have been emphasized. Although there is not a worldwide accepted definition of the green job, ILO defines as “decent jobs that contribute to preserve or restore the environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency”.

It is also discussed what impact the green economy will have on the labor market. According to UNEP, with the greening of jobs, additional jobs will be created in certain cases; some jobs will be replaced; some jobs may be lost without direct replacement and many current jobs will be redefined to become greener.

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CHAPTER 11

PHILANTHROPY, TRANSPARENCY AND SELF-REGULATION: A REVIEW OF ENVIRONMENTAL NGOS WITHIN THE AÇIK AÇIK PLATFORM

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ABSTRACT

This chapter highlights how important it is for non-governmental organizations (NGOs) to have responsible and transparent frameworks because these are necessary for building and maintaining donor trust. Legislative regulations that are obligatory to guarantee transparency cannot always guarantee the desired outcomes. Self-regulation initiatives stand out as a useful alternative at this point. The study describes self-regulation initiatives that NGOs participate in to strengthen transparency and, as a result, promote increased confidence and trust in civil society. Environmental NGOs, which create a strong footprint through the social impact created, attach importance to transparency, like other NGOs. This study aims to examine to what extent the Açık Açık platform, which operates as a self-regulation platform in Türkiye, fulfills its self-regulation functions for its members in the environmental area. While the Açık Açık Platform presents itself as a self-regulation initiative, it is only partially transparent in terms of information sharing and withholding details of decision-making processes and result assessments. It is possible to define the platform in its current form as a good-faith effort towards transparency.

Keywords: Non-Governmental Organizations, Transparency, Self- Regulation, Açık Açık Platform

1. Introduction

Charity activities aimed at people in need, individually or institutionally, have attracted the attention of the social policy discipline in every period. The main motive for the increasing interest in philanthropy, especially after the industrial revolution, is the widespread belief that philanthropy plays an important role in areas where public services are inadequate or encounter difficulties in reaching those in need. Charity activities carried out by individuals towards the whole or part of the society can be witnessed in every stage of history. These activities occur in a wide range of areas. It is clear that philanthropists make significant contributions to basic human needs such as food, shelter, clean water, health, search and rescue in emergency situations and education, as well as to various other fields such as environment, painting, music and sculpture. It can be said that individual efforts in the field of philanthropy are more prominent, especially in rural communities where the socio- logical structure is different compared to today. The increase in urbanization and the resulting change in the relationships between individuals have transformed individuals' approach to philanthropy.

In the past, philanthropic activities supported by large capital owners, usually through foundations, covered almost the entire field of corporate philanthropy. Charity activities carried out by individuals in their own milieu are generally activities that can be considered within the scope of fighting against poverty. Especially in urban areas, people who individually engage in philanthropic activities directly for those in need continue to exist, but corporate structures in the field of philanthropy are becoming more prevalent due to reasons such as the limited power of individual aid, the problems that individuals experience in identifying people in need, and the existence of organizations that bring together people with similar ideas. It seems that it is starting to be preferred. The activities carried out in this context go beyond aid to the poor and try to respond to social needs in various areas such as environment, education and art.

Individual donations are the most important element for maintaining these collective structures. Donors stand out as a very important stakeholder for NGOs that have no other income other than donations. Fluctuations in donations will make it difficult for NGOs to carry out their activities. To prevent such a situation, the relationship established with donors must be based on high trust. The most important condition for NGOs whose activities depend on donations to establish a trust-based relationship with their stakeholders is to have a transparent and accountable corporate structure.

Nowadays, when communication technologies appear in every aspect of life, transparency is a feature that is more demanded and more easily provided than before. It is becoming increasingly difficult for NGOs that do not have sufficient transparency to provide long-term mass donations. Therefore, many NGOs operating in Türkiye are taking steps to increase transparency. In addition to the steps taken by NGOs on their own, it is observed that self-regulation initiatives, examples of which are witnessed in the world, are also beginning to emerge, whose main aim is to transform NGOs operating in Türkiye into a more transparent structure. Civil society taking such steps through self-regulatory initiatives outside of state regulations and inspections is a confidence-increasing factor for civil society.

This study reveals the transparency levels of environmental NGOs that are members of the Açık Açık Platform, a self-regulatory initiative that works on the basis of voluntary members-hip and works towards the transparency of NGOs operating in Türkiye, by taking into account the transparency criteria announced by the platform. In the first part of the study, the concept of philanthropy will be discussed. The second part of the study aims to explain the importance of transparency and accountability for today's NGOs with a special emphasis on self-regulation. In the last part of the study, the transparency levels NGOs working in the field of environment, which are members of the Açık Açık Platform, a non-governmental platform operating to increase transparency in Türkiye, will be examined within the framework of the criteria reported by the platform.

2. Concept of Philanthropy

In its simplest and most general definition, philanthropy is the use of private resources, wealth, time and talent, for public purposes (Phillips & Jung, 2016, s. 8). Ownership of resources is the main factor that determines the form of philanthropy. Philanthropy emerges at three points: First, it is the money and assets that individuals donate throughout their lives. Secondly, they are assets donated by individuals through their wills. The final point is donations made by institutions owned by shareholders. While the services provided within the scope of the first two of the mentioned sources lay the groundwork for individual philanthropy, even if provided through various NGOs, the third source forms the basis for strategic philanthropy (Frumkin, 2006, s. 23).

Strategic philanthropy refers to the activities carried out for public purposes by for-profit enterprises, which generally have many shareholders, through the foundations they establish. These activities, which are evaluated under the title of corporate social responsibility, are an area that businesses attach importance to today. The philanthropic activities carried out by

companies are activities that are expected to be in harmony with the company's plans as well as the benefits they will provide to society.

It is not always possible for such result-oriented philanthropic activities, where decisions are made by a small number of people (mostly big shareholders and company executives) and often behind closed doors, to achieve the desired effectiveness. Although the choices made by managers in decision-making positions seem beneficial for the company and for the public interest in the short term, it is difficult for philanthropic activities that do not comply with the long-term goals of the public authority and conflict with market realities to provide the desired public interest in the long term. Therefore, at this point, it can be thought that state intervention (through incentives and guidance) can yield beneficial results. It is clear that such an intervention will have a negative impact on the civil dimension of philanthropy. Strategic philanthropy is becoming increasingly important in direct proportion to the increasing power of companies. However, revealing this importance is beyond the limits of this study. This study covers NGOs that maintain their existence through individual donations and mostly rely on mass donations.

Individual philanthropy is the spending of individuals' own resources for public benefit while they are alive or through will. In this context, another definition of philanthropy is to engage in voluntary activity for the public good. The diversity of individuals' voluntary activities will enable the emergence of different alternatives in the field of social welfare and make it possible for the public to have greater awareness of both the demands coming from NGOs operating based on donations and the demands coming from public authorities. Thus, a kind of voluntary welfare market will be formed.

Defining the concepts correctly is of great importance in terms of creating healthy discourses based on these concepts. In this context, defining the concept of philanthropy requires an explanation of the concept of charity, which is sometimes used synonymously. The concept of philanthropy in the literature is gradually differentiating from the concept of charity. While the concept of charity refers to spending money and time to help others, philanthropy describes a more strategic and systematic approach to spending money and time in a way designed and organized to target the systemic or root causes of social evils and problems (Taylor, Strom, & Renz, 2014).

The majority of important decisions made regarding philanthropy are private rather than public decisions. Many decisions, from how much to donate to whom, to decisions about the institution to be established for philanthropy, to the objectives of the institutions to be estab-

lished and their administrative structure, are private decisions (Tyler, 2013, s. 55). Although the decisions taken are private, when considered holistically, it is conceivable to state that the results directly and indirectly affect every individual and/or institution in the society.

Considered within this framework, individuals' decisions about donations are a complex process that leads to some important consequences in the public sphere. (Frumkin, 2006, s. 2) Since the decisions taken by individuals in society concern a significant part of the society, the issue of philanthropy is no longer a matter of private sphere, but has become an area that policy makers try to understand and direct. Despite all the guidance efforts of policy makers, it is impossible to predict individuals' behavior completely. Therefore, all steps in the field of philanthropy will contain non-objective elements.

The variables that individuals consider when making decisions in the field of philanthropy, although also affected by the culture they live in, are basically grouped under five headings (Frumkin, 2006, s. 15-20):

- 1) To achieve social and political change through the special funds donors establish,
- 2) To ensure the establishment of important social innovations and to support them,
- 3) To ensure redistribution of resources. (Local philanthropic activities, even if they are small-scale, are effective in redistributing income.)
- 4) Charity is a pure affirmation of pluralism as a civic virtue. Philanthropy contributes to the decentralization of power by promoting pluralism.
- 5) Another reason for philanthropy is that it provides for the needs and desires of the donor.

One of the effective factors in meeting the needs and desires of donors is their gaining social status and being included in various social networks. The connections gained in this way will also provide an important basis for later philanthropic activities. It is possible for donors to be influenced by the opinions of other donors and shape their future donation preferences accordingly.

Making people aware of social problems they have not encountered before is another benefit obtained through philanthropic activities. This awareness gained by people who have the financial power to donate will bring about greater efficiency in the use of both public and private resources in the future. It is possible to expect individuals to make more conscious demands for solutions to the problems they are aware of and to hold relevant institutions

(Government or NGOs) to account more effectively.

Meeting social needs through philanthropy is a desired and supported phenomenon all over the world. However, there is no system that relies entirely on the philanthropy of individuals. It is not always possible for individuals' voluntary donation preferences to yield the desired results, both in solving available social problems and in efforts to prevent potential social problems. The timing of donations and the presence of an audience inclined to donate on popular topics are the main reasons for this situation.

Donors' donation timing is often uncertain. Therefore, it is not possible to rely entirely on philanthropy in financial terms to solve some social problems. Donations aimed at social problems that arise suddenly and have high social visibility have an important place among all donations. Therefore, philanthropic activities generally have a reactive nature. Although this situation provides some benefits, it limits the maximum benefit that can be obtained from philanthropy. To prevent this, it is important to provide donations on a regular basis. The most well-known example of this situation is blood donations. Although many people donate and fill blood banks in emergency situations (earthquake, flood, etc.), many blood banks may experience difficulties in supplying their daily blood needs ('Kan bağışında çözüm sosyal medya çağrılarını değil', 2019).

The fact that many philanthropists focus on the same problem at the same time leads to the use of resources in the same places. Although certain problems will be resolved as a result of such an overlap, the waste of resources that will occur and the donors observing that their donations go to undeserving people due to the overlap are important problems that will arise. Especially after natural disasters, the desire of many aid organizations operating in a certain region to distribute aid as soon as possible is the most common cause for such problems (Kaya, 2023).

One of the situations where individual donations do not have the desired effect is when a donation made in good faith by a very wealthy donor conflicts with market realities. Large donations made by individuals with less knowledge about social problems within the framework of their own perceptions, acting contrary to the market mechanism, or donations made to the donors (such as outdated vocational training) not being able to be used in the market in the future, will create some problems. One of the main arguments of those who defend state intervention is that these disputes should be prevented through public intervention.

Just as states intervene in the market to eliminate market failures, various interventions in the field of philanthropy may also be possible. It is a controversial issue that governments try

to direct philanthropists in certain areas. While, on the one hand, there is the existence of the state as an institution that has more information in the areas needed by the society, on the other hand, it is possible that such a direction may hinder the development expected from the civil sphere. Therefore, states often prefer to provide guidance through incentives rather than direct intervention. Incentives based on tax deductions are one of the most frequently used methods.

When considered in the light of the great fortunes earned in today's world and the heavy taxes that must be paid, the legitimacy of philanthropy begins to be questioned, especially in a philanthropy level where tax privileges exist. In an atmosphere where individuals and the NGOs they are affiliated with benefit from tax exemptions, the evaluation of the assets owned by these organizations as 'public money' constitutes an important area of debate (Tyler, 2013, s. 8).

In many countries, public authorities provide support through tax exemptions to NGOs operating in the fields they determine. Institutions applying for tax exemption must meet certain qualifications. For example, institutions that want to benefit from tax exemption in the United States must have four characteristics:

1. Foundations should be established and operate for charitable purposes.
2. Foundations should not use their funds for private purposes.
3. Foundations should not engage in unauthorized lobbying or political activities.
4. Foundations must comply with reporting rules (Tyler, 2013, s. 20-23).

Although the apparent purpose of tax incentives is to increase the contributions of civil society, especially to maximize the social benefit that can be provided through volunteering activities, in many countries tax regulations for NGOs can lead to debates between the ruling and opposition parties. Both allegations of favoritism in the selection of tax-exempt NGOs and political disagreements in determining the areas to be exempt can occupy the political agenda.

Although tax exemptions for certain areas are encouraging for NGOs, this may have a negative impact on the development of the understanding of civil society in different areas. For example, if any state has decided to support NGO activities in the field of poverty through tax incentives, after a while it is possible for all non-profit organizations to somehow include their projects in the field of fighting poverty. Presenting projects with other purposes with some changes just to benefit from tax exemption is not ethically correct and will prevent the planned project from providing the desired benefits (Frumkin, 2006, s. 37).

In many cases, the benefits of financial resources provided through incentives for NGOs remain at the national level. Considering the developments in communication technologies and the ease of international money transfer, the importance of donors abroad is gradually increasing. However, the fact that tax incentives granted to donors (such as deducting the donated amount from the income tax base) are only valid for national-level NGOs constitutes a deterrent condition for international donors.

Legislators advocate that tax exemptions for donations be at the national level due to the vagueness of the concept of ‘public benefit’, the supervisory authorities’ insufficient control over the international flow of donations, the lack of adequate supervision in the country where the donated foreign NGO is established, and the low actual national benefit. On the other hand, if a foreign NGO is organized domestically and continues its activities domestically, and if the donor or NGO requesting the domestic tax incentive accepts the responsibility of effective and practical control of the donations made in the target country, it is claimed that it would be right for NGOs in this situation to benefit from tax advantages (Koele, 2004, s. 324-326).

The benefits provided by NGOs that develop policies to solve many social problems at national and international levels based on donations from individuals, and the financial and social power they increasingly possess, draw attention to the functioning of these organizations. Non-governmental organizations, whose activities are controlled by law in many countries, are faced with demands for greater transparency, going beyond legal regulations. The transparency expectations of public authorities and donors (including potential donors) push non-governmental organizations to take steps in this direction, both individually and as a sector.

3. Transparency and Non-Governmental Organizations

Transparency is an important feature that today’s societies demand from all institutions, including states. The idea that all stakeholders of a process should have the information they request about the process, as a requirement of the democratic management approach, brings the phenomenon of transparency to the fore. For NGOs that continue their activities with mass donations, transparency is indispensable, even in cases where there are no legal obligations. Cases where transparency is absent or impaired lead to trust discussions for both available and potential donors. In many cases where this problem cannot be resolved in a short time, consequences may lead to the destruction of the relevant NGO. In this context, the issue of transparency has become a matter of existence for many modern NGOs.

Transparency encompasses the demand for information, the ability of citizens to obtain information, and the supply and actual release of information by NGOs and the government.

Transparency, which is often used in other fields (especially international relations) to mean the fight against corruption, is interpreted for NGOs in a similar way to accountability through greater public disclosure (usually financial accountability), but is used in a secondary way as a mechanism to create trust (Ball, 2009, s. 298). Therefore, many works in the literature use the concepts of transparency and accountability synonymously.

The concept of accountability means the process by which individuals or institutions respond about their activities and the results of those activities. When viewed in this light, it accountability can be understood as the expectation that an actor will report its performance to its stakeholders (Deloffre, 2016, s. 726). From this perspective, transparency does not necessarily lead to accountability or accountability to transparency. If the power of transparency rests on the ‘power of shame’, its impact on the truly shameless may be limited. In this case, although transparency is necessary for accountability, it is not sufficient to create accountability (Fox, 2007, s. 664-665). Legitimacy, which arises when NGOs claim to represent the public, and performance issues, in which they accuse the state mechanism of being inadequate, constitute the three dimensions of accountability, along with transparency (Songco, 2006).

Table 1: A first approximation of the relationship between transparency and accountability	
<i>Transparency</i>	<i>Accountability</i>
Dissemination and access to information	
Institutional ‘answerability’	
	Sanctions, compensation and / or remediation
Fox , p.668.	

Table 2: Unpacking the relationship between transparency and accountability			
<i>Transparency</i>		<i>Accountability</i>	
Opaque	Clear	Soft	Hard
Dissemination and access to information			
	Institutional ‘answerability’		
			Sanctions , compensation and / or remediation
Fox , p. 669.			

An example of transparency but not accountability is given in the situation in Table 1. At the intersection of both situations is institutional answerability, where institutions produce and investigate information about actual corporate behavior, not just publish it. In Table 2, transparency and accountability are divided into their constituent subunits. Opaque or vague

transparency is a type of transparency in which organizations publish information but do not disclose how they behave in practice in areas such as how they make decisions or the results of their activities. Clear transparency refers to information access policies and programs that provide reliable information about corporate performance, focusing on the responsibilities of officials as well as where public funds are used (Fox, 2007, s. 668). Clear transparency does not guarantee hard accountability. Hard accountability requires the intervention and sanctions of other public actors.

Some institutions share large amounts of information with the public. Sharing large amounts of information and creating disproportionate amounts of information in the name of transparency will create a burden on end users. Such a situation will paradoxically reduce the level of transparency of the organization by causing 'data asphyxia' (Vaccaro & Madsen, 2009, s. 227). It is ineffective if the information transparency provides to citizens does not have any impact on citizens' choices (Ball, 2009, s. 300).

Therefore, the benefits of information that is not classified in a way that end users can easily interpret it in terms of transparency are limited. Ensuring transparency in this sense is a costly process, especially for NGOs that have a large number of donors from different socio-economic groups.

Non-governmental organizations today have donors and beneficiaries from different social classes. Therefore, steps taken for transparency must be present at all levels of activity. The main areas in which the transparency of NGOs based on donations from individuals are examined are; collection of donations, relations with beneficiaries, spending of donations and internal transparency. Failure of transparency at any point in the process may lead the process in a direction undesirable for all stakeholders.

Donations made by donors will be a kind of guide for NGOs. If donors distrust an NGO for any reason (such as project failures, successful activities of rival NGOs, concerns about transparency), they may express this by donating less or not at all. Therefore, fundraising can be considered not only as a financial resource but also as a vote of confidence from donors.

Collecting donations is the stage where NGOs interact the most with the public. As a result of developments in the communication and financial technologies, the number of potential donors that can be reached is constantly increasing. As a natural consequence of this situation, a call for donations is made to a wide audience with different characteristics, instead of a limited audience whose socio-economic characteristics can be predicted (Bekkers, 2003, s. 598). Fundraising activities, like other activities, have some costs. One of the important aspects of transparency is that fundraising costs are disclosed to donors.

In some cases, it is possible for NGOs not to take into account the high ratio of the activities they organize for fundraising purposes (advertising activities, meetings, meals, announcements, etc.) to the products they will provide. Especially in areas where competition is intense in fundraising, all kinds of activities are seen as a part of public relations work. However, many donors want their donations to be spent for specified purposes. Therefore, the high cost of fundraising activities is not desired by donors.

In cases where a single donor makes a large donation in addition to mass donations, the transparency that must be provided to stakeholders is the disclosure of the relationship between the major donor and the donated institution. For example, the fact that a major donor is an important supplier in the field of donation may lead small-scale individual donors to question the existence of a conflict of interest. In order to prevent such a situation, it must be declared that there will be no conflict of interest and all donors must be informed about the criteria by which the expenditures will be made.

In certain instances, a significant portion of the donations collected may be provided by other financially strong NGO. In such a case, the relationship between the fund-providing organization and the fund-receiving organization should be transparent. It will be important to take into consideration the above-mentioned relationships of interest, especially at a point where the financial power of the funding organization is based on a single donor.

Even if NGOs believe in transparency, they do not support transparency in all cases. They do not want to disclose some information about those who support them (Ball, 2009, s. 298). Individuals who donate may also not want their names to be announced. Anonymity may also be important to donors for other reasons. Religious beliefs or principles of morality are important motivators for generous donations. Anonymity is often an integral part of these principles. This could legitimately restrict the public openness policy (Tyler, 2013, s. 88). While this does not pose a problem in small-scale donations, the public may demand to learn the identity of the donor in major donors.

In many countries, donations made by foreign individuals and organizations are subject to various rules. Donations made by foreigners may be subject to increased surveillance by governments for national security and cultural reasons (Ebrahim, 2003, s. 816). In such a case, although individual donors' requests for anonymity are taken into account, it should be disclosed how much of the donations were provided by foreign donors. It is a requirement of transparency that the information provided to the authorized institutions is shared with the public.

In the face of constant donation requests, a problem called ‘donor burnout’ may emerge after a while for donors (O’Dwyer & Unerman, 2008, s. 811). It is possible that donors who are not adequately informed during the fundraising process and who are constantly faced with similar requests for help may become insensitive to these requests. It will be difficult to motivate donors whose donation motivation has decreased and who have some kind of prejudice to donate again.

The relations of non-governmental organizations with the masses that will benefit from their activities is another dimension where transparency is important. Transparency towards this group is valuable for improving downward accountability. The main factor that determines transparency is the characteristics of the target audience of the activities. For example, the transparency demands of disadvantaged groups such as the poor and the needy will not be at the same level as the transparency demands of other groups. The strengths of the parties are important in determining the demands.

It is rare for beneficiaries to call for accountability when they are dependent on NGO assistance (Andrews, 2013, s. 99). Most of the time, it is not possible for beneficiaries to question the quantity and quality of goods and services provided to them within the scope of assistance or services. Users of NGO services often do not have the right to make a choice about NGO services. They do not have the chance to punish unreliable and faulty organizations by stopping doing business with these institutions (Burger & Owens, 2010, s. 1263-1266). In cases where there is no element of dependency, demands for transparency and accountability will increase in proportion to the qualifications of the beneficiaries. Those who find themselves in need due to the negativities that arise as a result of natural disasters such as earthquakes and floods may belong to different social classes. Beneficiaries with a higher level of education (especially in the environmental and artistic fields) who have doubts about the transparency of NGOs are more likely to inform both the relevant public authorities and donors and force them to take steps on this issue.

Ensuring the participation of those who benefit services provided by NGOs in decision-making processes will be beneficial in terms of transparency. The main benefits to be obtained at this point are: increased effectiveness of the services provided, easier attainment of organizational goals, increased legitimacy, development of effective dedication among NGO board members, feeling of being useful, increased self-esteem, learning new things, increase in social capital (increasing the involvement of aid recipients in the policy development process) and increasing the quality of services received (Wellens & Jegers, 2014, s. 939). On the other hand, transparency practices towards beneficiaries are generally focused on the results

of the program. In order for there to be real accountability, it is necessary to be transparent to the beneficiaries at every stage of the program.

In some cases, the information and documents requested by NGOs from their applicants are considered as degrading and interference with private life, and are criticized by the applicants. Allegations of power asymmetry between the institution and the applicant lead to such complaints in requests for information and documents. However, this information and documents are also required for transparency. The institution must have some information in order to make and implement effective decisions. Moreover, it is neither possible nor wise for the institution to make every stage of its decision-making mechanisms transparent (Tyler, 2013, s. 65).

Services provided by NGOs aimed at the poor or low-income people may be manipulated for their own benefit by those outside the targeted groups, especially the middle class. “The hijacking of welfare by the middle class” (Spicker, 2014, s. 51), will not be desired by either donors or NGOs. Therefore, NGOs need to be transparent about the way they will follow in delivering the program to the target audience or excluding other undeserving groups.

Spending made by NGOs to carry out their activities are the area where transparency is most sought. The quality and effectiveness of expenditures are of primary importance for many donors. Donors’ reactions to expenditures deemed ineffective in the short term are limited. Donations are voluntary gifts over which their donors have no legal claim. (Bekkers, 2003, s. 597) However, spending that are not made appropriately will prevent future donations and probably lead to the end of the effectiveness of the institution in question.

Transparency and accountability have become inevitable, especially for NGOs that rely on individual donations. The inspections implemented by public authorities within the scope of the law include the control of various steps that are mandatory for NGOs. It is possible for the public authority to impose various sanctions for irregularities detected as a result of these inspections. The reputation of NGOs subject to such sanctions in the eyes of the public will be damaged.

There are some regulations to supervise NGOs in all countries in the world where NGOs operate. Although the scope of these regulations varies from country to country, inspections carried out only by public authorities will be insufficient to ensure the transparency demanded by the public. The main motives for this situation are the inadequacy of public resources allocated for auditing, the lack of sufficient qualifications of public officials performing audits, political relations, and the inability of the laws enacted to respond adequately to changes in

the field of civil society, which has a dynamic structure . These negativities push NGOs who want to satisfy donors who demand more transparency to new searches within themselves. As a result of these searches, civil society has resorted to building independent mechanisms to monitor itself. These structures, which can be called self-regulatory initiatives, can be in the form of a platform or can operate as an association or foundation on their own. Self-regulation stands out as an increasingly desired control method by modern societies seeking greater transparency.

4. Transparency and Self-Regulation of Non-Governmental Organizations Definition of the Concept of Self-Regulation

The positive image of non-governmental organizations in many countries, due to the importance of their contributions to societies at national and international levels, is largely based on the common belief that these organizations act within the framework of good faith rules. Goodwill and upholding the values of society are the two elements to which NGOs primarily owe their legitimacy (Lloyd & Casas, 2006). However, NGOs today need to prove their contributions to society and their successful representation efforts in this direction.

It is possible for states to show different approaches towards civil society. Although the support and control mechanisms for civil society vary, it is desirable for NGOs to continue their activities independently of the state in all democratic countries. On the other hand, the degree of financial dependence on state support and the scope of laws regarding the supervision of NGOs are important factors affecting this independence.

The relationship between NGOs, which provide their activities largely with state support, and states is complex. Both the selection criteria for projects to be supported with public resources and the supervision of projects lead to many conflicts of interest. If this process is not managed well, NGOs that continue their activities with public resources will be accepted by the public as semi-official or pseudo-official organizations or organizations that benefit from political favoritism. In such a case, it will be difficult for these institutions to collect mass donations, apart from various state-sponsored campaigns. In this study, the concept of NGO refers to organizations that base their activities on personal and/or mass donations of donors.

Apart from financial support, another contact the state has with NGOs is the obligation to supervise. Whether or not they base their activities on public resources, NGOs are subject to some form of public control, the content and scope of which varies around the world. It is not correct to perceive the existence of this control as a direct intervention in civil society. However, for the reasons mentioned before, it is possible for states to assume a mission like

the sword of Damocles over civil society. Too loose control over NGOs may trigger abuses. On the other hand, overly strict controls will cause problems, especially for newly established NGOs, in terms of sustaining their existence.

The existence of state control does not mean that NGOs are completely transparent. Due to NGOs' relations with the state and conflicts of interest, the adequacy and objectivity of public auditing may be questionable. At this point, it is seen that types of control other than public control emerge.

5. Types of Self-Regulation

Transparency and accountability of non-governmental organizations, especially organizations that largely rely on mass donations for their financial resources, are more important today than ever before. Thanks to developing financial technologies, donations can be collected faster and at a lower cost, allowing more NGOs and projects in the field of civil society to seek donations from larger audiences. This situation creates a competitive environment for mass donations. When choosing among many projects pursuing similar goals in similar areas, trust in the institution managing the project is also a determining factor, as well as the content of the project. However, in mass donations, donors' relationships with the NGOs they intend to support are often non-existent or superficial. In such a situation, the creation of a sense of trust is directly proportional to the level of transparency and accountability of the NGO to which donations are planned.

The framework of laws regulating the relations between the state and civil society is important in determining the level of freedom of civil society. It is not possible for NGOs whose activities are strictly controlled and directed by law to provide the social benefits expected from them. Therefore, the regulations made by the state in the sphere of civil society should not damage the civil character of civil society. On the other hand, adequate supervision is desired by both donors and the public. At this point, self-regulation practices emerge as both an alternative and a supporting mechanism.

Self-regulation of NGOs occurs in three ways. The first method is when two or more organizations come together and determine common norms and standards. In this context, the answers to questions such as how good practices will be shared and what information will be disclosed to the public and how are decided together. Secondly, self-regulation is carried out by a third party, a peer NGO or observer who undertakes external evaluation of the organizations. Finally, self-regulation is carried out by an umbrella organization that is accredited by the state, but has a distant relationship with the state (Hammer, Rooney, & Warren, 2010, s. 4).

However, as mentioned before, the third method may conflict with the spirit of civil society, as the relationship of the state with civil society may cause some problems.

A self-regulatory regime can in principle be constructed from any combination of standards and practices. Empirically, three forms appear to predominate: the national 'guild', the voluntary 'club' and the industry code (Gugerty, 2007, s. 7). On the other hand, although participation in voluntary clubs is voluntary, these organizations are also required to have certain reporting requirements and monitoring mechanisms. Although the Açık Açık Platform (association) discussed within the scope of this study is based on a voluntary basis, it has not been determined whether it has any reporting requests from its participants or whether it has monitoring mechanisms.

6. Advantages of Self-Regulation

In order to provide the benefits expected from it in all areas of social life, civil society must be transparent and accountable, as expected from public institutions. Especially NGOs that base the financing of their activities on the donations of individuals and institutions need to be more sensitive on this issue. Although public control mechanisms bring some regulations to ensure this transparency and accountability, self-regulation practices implemented by NGOs alone or through voluntary associations go beyond public control and provide some additional advantages.

If a self-regulatory initiative has a recognition accepted by the majority of stakeholders for complying with the rules it has determined, its social legitimacy will be high. In case of violation of the rules, legitimacy will decrease or disappear completely. (Laybourn, 2011, s. 5) The disappearance of social legitimacy means extinction for such organizations. It is of great importance that self-regulation initiatives have transparent communication with all stakeholders in order to avoid such a situation.

Although self-regulatory initiatives are by nature non-governmental organizations, it is also possible for them to cooperate with public institutions. Authorizing NGOs to issue some of the certifications required for civil society to benefit from public resources through self-regulation initiatives could give these institutions an important status. In this case, the phenomenon of voluntary membership will virtually disappear, as membership in these initiatives will become mandatory for NGOs that want to benefit from public resources. Additionally, if the costs of certification processes are requested from NGOs are high enough, it will be difficult for NGOs, especially those with low budgets, to benefit from public resources (Sidel, 2005, s. 834).

Self-regulatory initiatives or symbols are important for NGOs (Laybourn, 2011, s. 4). This importance is directly proportional to the social legitimacy that self-regulation initiatives have. NGOs that have these symbols and display these symbols in visible places (website, project launch documents, etc.) will also have the social legitimacy that self-regulatory initiatives and therefore symbols have. On the other hand, increasing the social recognition of such symbols requires a significant public relations effort.

NGOs may have an understanding of accountability only towards donors in their relations with stakeholders. A similar situation applies to self-regulatory initiatives. It is possible for self-regulatory initiatives to prioritize donors, especially large donors, when establishing transparency and accountability criteria. Pushing other stakeholders to a secondary position in terms of accountability will harm self-regulation initiatives by reducing social legitimacy in the long run.

One of the issues that should be taken into consideration for self-regulatory initiatives that have member NGOs operating in different fields is the capacity of their members to respond to the context in which they operate (Laybourn, 2011, s. 8). Today, there are NGOs operating in a wide variety of fields. Differences in the areas of activity also create differences in terms of donors. Therefore, transparent communication of the activities of NGOs to all stakeholders, especially donors, requires the processing and presentation of different types of information.

For NGOs with different types of donor groups, transparency is a phenomenon that needs to be handled carefully. Differences between donors' levels of education, income, social awareness and interest will lead to different demands in the field of transparency. Self-regulatory initiatives can group NGOs according to the areas in which they operate and determine the elements that need to be shared at the level of voluntary transparency on a group-specific basis. Such a policy will not only help donors make healthier decisions, but will also facilitate comparisons between NGOs in terms of transparency.

Today, it is seen that NGOs operating on the environment have made significant progress in both quantitative and qualitative terms. The activities of environmental NGOs are effective in making some social decisions in many countries of the world. Increasing sensitivity about the environment and climate increases the visibility of NGOs operating in these areas. As a result of the support provided by different social groups, the social effectiveness of environmental NGOs is increasing. This activity gains an economic character, especially in the use of natural resources and the establishment of large production facilities.

The massive nature of environmental NGOs requires these NGOs to be more transparent and accountable in their activities (especially regarding donations). Like other NGOs, these

NGOs want to go beyond public control and provide the transparency and accountability demanded by the public through self-regulation. At this point, one of the most important issues to consider is the danger of environmental NGOs, whose activities have a great impact on economic decisions, becoming instruments of certain conflicts of interest. The activities and claims of environmental NGOs are of economic importance, especially in certain sectors (heavy industry, textile, chemical industry, etc.) where competition is strong and create a significant environmental impact. It is possible for rival companies (in some cases, countries) to resort to environmental arguments in order to gain an advantage in competition and to cooperate with environmental organizations in this context. This situation can lead to significant transparency problems for environmental organizations.

Environmental NGOs should always take the economic context into consideration when researching policies and collecting donations. The sources from which donations, especially major donations, come from and the timing of donations are information that should be disclosed not only for the donors but also for all stakeholders. Information shared due to mandatory reasons may often be insufficient to ensure genuine transparency. At this point, self-regulation initiatives emerge as a good alternative. In the next part of the study, environmental organizations registered to the Açık Açık Platform, a voluntary self-regulation initiative operating in Türkiye, will be evaluated in terms of transparency.

7. Açık Açık Platform

Açık Açık Platform (Açık Açık means openly or frankly in Turkish language) is a voluntary platform established in 2016 by Açık Açık Association to develop the donation culture in Turkey and to ensure that member NGOs collecting donations gain a transparent and accountable structure. In this sense, it is the first and only organization operating in Türkiye. The aim of the platform is for potential donors to compare member NGOs based on certain criteria, to obtain information about the projects of NGOs, to contact the donor relations units of member NGOs and to donate to the NGOs of their choice (Hikayemiz, 2023).³⁸ The platform has a range of members operating in a wide range of fields, especially environment, health, education and humanitarian aid. A grouping system that makes it possible to compare NGOs operating in different fields within their own groups is available on the official website. The grouping system also makes it possible for potential donors to be classified according to the type of NGO, the groups that will benefit from the services, the availability of an independent audit report, the availability of a social impact report, whether there is an online store or not, and whether online donations can be made or not.

The ‘platform usage fee’ paid by member NGOs is directly proportional to their financial strength. Platform usage fees for 2023 start from 70 TL per month for NGOs with income below 1 million TL and reach 1100 TL for NGOs with income of 100 million TL. When the financial information published on the platform by Açık Açık Association, to which the platform is affiliated, is examined, it is seen that purpose-oriented promotional expenses and salary payments constitute the main expense items. However, this information is for 2021. No information could be found for 2022.

NGOs that want to become members of the platform go through a process consisting of four steps. First of all, the NGO profile is created on the website. In the second step, the board of directors and key personnel information on the official website of the applicant institution, the announcement of the acceptance of the Donor Rights Declaration, the publication of the previous years’ financial information and the entry of the URL information into the platform panel are carried out. The third step of the application process is to sign a contract appropriate to the financial size of the applicant institution and send it to the platform’s mail address. In the last step, the application is checked by the platform and if there are no deficiencies, the approval process takes place (Sıkça Sorulan Sorular, 2023).

The Donor Rights Declaration, which is among the membership conditions of the platform, consists of the following articles: “

1. Being informed about the NGO’s mission, vision, how the donation will be used and its capacity and intention to use the donation efficiently in line with its goals,
2. Obtaining information about the board of directors and managers and expecting the managers to fulfill their duties cautiously and prudently,
3. Current financial access to information,
4. Requesting a guarantee that the donation will be used for its intended purpose,
5. Appropriate thanking,
6. Requesting the confidentiality of donations in accordance with the law,
7. Requesting that all relations established with all employees representing the institution be at a professional level,
8. Knowing whether the person requesting the donation is a volunteer, an employee or someone outside the institution,
9. Requesting that the contact information be deleted from the lists if it is to be shared with someone else,

10. He/she has the right to ask questions while making a donation and receive timely, accurate and clear answers.” (Bağışçı Hakları Beyannamesi Ne Diyor?, 2023)

It is expected that the Donor Rights Declaration will also be published by member NGOs on their official websites. However, there is no information on the official page of the Platform on how to determine whether the rights specified in the Declaration are fulfilled or not. It is not clear what the procedures will be followed in the event of a rights violation. In this form, the declaration can be considered a declaration of good faith. In addition, the format of the other information requested for membership and how their accuracy will be tested are not clarified on the official website of the Platform.

In order for member NGOs to collect donations through the platform, official fundraising permission must be obtained. Among the NGOs within the scope of the study, only the Turkish Foundation for Combating Erosion, Afforestation and Protection of Natural Assets (TEMA) has the right to collect donations through the platform. It is stated on the platform that those who want to donate to other NGOs should visit the official website of the relevant NGO if they press the support button.

The platform primarily provides various information such as the founding year, official title, field of activity, beneficiary groups, general manager, donor relations officer and contact information of the NGOs that donors want to examine. The areas where donors can obtain information through the platform are grouped in six groups: Financial information, board member list, employee list, independent audit report, social impact report and activity report. If any information is provided by member NGOs in these areas, the box next to the title contains a check mark and can be visited online. In this study, only NGOs operating in the environmental field were examined.

8. Levels Of Transparency Provided By Environmental Ngos That Are Members of Açık Açık Platform Through Self-Regulation

NGOs dealing with environmental problems in the world and in Türkiye have begun to gain a mass character, rather than being the field of activity of only a small group of people who are sensitive to environmental issues. In parallel with the increase in social awareness of environmental NGOs, their increasing influence on policy-making and decision-making processes attracts attention. In particular, negative environmental externalities that occur during the production and presentation of goods and services and the management of waste cause concern among the masses. Environmental organizations have played important roles in the emergence, shaping and management of this concern. This increasing power and effe-

ctiveness of environmental NGOs has pushed policy makers and large capital groups to act more carefully in the environmental field. Therefore, environmental NGOs do not only have agency powers in economic decision-making processes. Structural forces have also begun to become a determining factor.

The responsibilities of environmental NGOs, which have started to be supported financially and with voluntary labor by larger masses in parallel with their increasing activities and power, have also increased. Environmental NGOs, which can leave deep traces on the economic structure with their actions and discourses, need to make additional efforts in terms of institutional transparency. Although the information shared due to legal obligations provides transparency to some extent, it is important for environmental NGOs to have an understanding of transparency based on volunteerism and to target all stakeholders in this context. In this study, it will be examined to what extent the shares of environmental NGOs on the Açık Açık Platform, which operates as a self-regulatory initiative, provide transparency within the scope of the platform.

NGOs operating in the field of environment on the official website of the Platform were determined by selecting environmental option from the search criteria. In this context, 10 NGOs were identified. The distribution of these NGOs as foundations and associations is equal. These foundations and associations are as follows:

- 1) The Foundation for the Protection and Promotion of the Environment and Cultural Heritage (ÇEKÜL)
- 2) Mind Your Waste Foundation (MYWF)
- 3) Turkish Marine Environment Protection Association (TURMEPA)
- 4) Marine Life Conservation Association
- 5) Aegean Forest Foundation
- 6) Equality and Leadership Platform Association for All (HelpZone)
- 7) Women in Fisheries Society
- 8) The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats (TEMA)
- 9) World Wildlife Fund (WWF)
- 10) World My Home Association to Combat Climate Change

Environmental NGOs operating on the Açık Açık Platform operate in many various areas such as marine life, climate change, waste management and erosion. Among these NGOs, the World Wildlife Fund (WWF) is the Turkish branch of a global NGO operating worldwide. Other NGOs are non-governmental organizations originating from Türkiye. It has been observed that there are large differences between the financial and human resources capacities of NGOs. This situation is generally reflected in the quality of the information shared within the scope of the platform. In the next part of the study, the extent to which the topics shared with stakeholders within the scope of the platform provide transparency will be examined on the relevant topics.

9. Financial Information

Financial information is available except for one of the NGOs examined within the scope of the study (World My Home Association for Combating Climate Change). However, the financial statements declared by four of the NGOs are not up-to-date and cover the year 2021. Financial data for 2022 of five of the NGOs is available. On the other hand, although some of the declared financial statements are tables approved by certified public accountants, some of them include financial statements submitted to the General Directorate of Civil Society Relations of the Ministry of Internal Affairs. The published declarations show the income and expense items of NGOs in general. Although there is information about overall expenses and purpose-related expenses, financial statements do not contribute to understanding whether NGOs' spending are cost-effective.

When the donation sources declared by platform member NGOs are examined, it appears that only the World Wildlife Fund (WWF) receives support from governmental institutions. On the other hand, it has been declared that the Women in Fisheries Society and the Equality and Leadership Platform for All Association (HelpZone) did not receive any donations during the specified financial periods. For NGOs that accept donations, there is no explanation on the platform about how much of their donations are corporate and how much they receive from individuals.

When the spending of member NGOs are examined, it is seen that overall expenses and operating expenses are included in the financial statements. However, in the announced financial statements, it is not stated in detail in which areas the specified expenditures are made and what criteria are used in purchasing goods or services. Therefore, donors' and other stakeholders' information about expenses remains limited.

10. Board Members List

The most important body of NGOs that makes important decisions is the board of directors. It is of great importance for stakeholders to know who the board of directors of an NGO (if any, other administrative units) consists of. It is not always possible for all relevant stakeholders (especially donors) to know the qualifications of those serving on boards of directors. Therefore, it is important for transparency that the CVs of the board members are included on the official website of the relevant NGO.

The existence of CVs is important in two respects. First of all, a standard CV is required to understand whether the members of the board of directors have the necessary training and experience in the management of the NGO. Secondly, the existence of CVs is important to ensure that board members do not have any other positions that would create a conflict of interest with the duties they perform. In some cases, it is important for transparency to determine the social networks in which board members are involved (graduated from the same school, kinship relations, membership in some economic organizations, etc.). At this point, the existence of resumes is of vital importance.

When the NGOs subject to the study are examined, it is seen that all of the NGOs publish the member lists of their boards of directors on their official websites. This has been verified by visiting the pages one by one. However, none of the NGOs published the CVs of the board members on their own pages. It is possible to reach some conclusions about the qualities of these names as a result of individual effort. However, the lack of resumes for a more detailed analysis of the board members of NGOs, especially those operating on a very sensitive issue such as the environment, poses a significant problem.

It is seen that the boards of directors of the examined NGOs, especially those that are large in terms of human resources and finance, have members who share the same surname with well-known families of the business world in Türkiye.¹ At this point, although good faith rules are essential, some mechanisms must be implemented to prevent possible conflicts of interest. As a result of the investigations, it is possible to say that the relevant NGOs do not have such a mechanism.

11. Employee List

It is an important ethical rule that those employed in all institutions where paid or voluntary work is available are selected on the basis of merit and without any discrimination. In

1 <https://yuvamdunya.org/pages/yuvam-dunyalilar>, <https://www.turmepea.org.tr/hakkimizda/yonetim-kurulumuz>.

many countries of the world and in Türkiye, this situation is regulated by labor laws. NGOs whose income depends on public resources and donations need to pay more attention to transparency in the selection, promotion, remuneration and dismissal of employees. In this context, it is important to share with stakeholders how all processes are operated and what procedures will be applied in case of conflict.

The contributions of having the list of employees listed among the transparency criteria of the Açık Açık Platform on the official website in terms of transparency seem limited. One of the limited contributions of the employee list is that it provides a reference point (albeit incomplete) to show the extent to which gender equality in employment is achieved. Having the CVs of the employees may provide some extra benefits at this point. Knowing the qualifications of employees will provide important information about merit and possible conflicts of interest, similar to the condition of board members.

It is seen that all NGOs examined within the scope of the study published the employee list requested by the platform. However, it appears that no NGO publishes employee CVs. Therefore, the transparency expected to be achieved by publishing the list of employees will be limited. As a result of the examinations made on the official websites of the relevant NGOs, no anti-discrimination policy was found in human resources practices.

12. Independent Audit Report

In many countries around the world, it is a legal obligation for private institutions and NGOs above a certain financial magnitude to be audited by independent auditing institutions, apart from public audit, voluntary self-audit and in-house audit. It is possible for low-budget institutions to be subject to independent audit at their own discretion. However, high costs and institutional inadequacies often lead to this type of audit not being preferred. The basis of audits carried out by independent audit institutions is the audit of an independent audit institution whether the financial statements of the relevant unit (company or NGO) comply with the standards specified in the law.

It was observed that two of the NGOs examined within the scope of the study (Turkish Marine Environment Protection Association (TURMEPA) and World Wildlife Foundation (WWF)) had independent audit reports. Although it was stated that one of the NGOs (TEMA) had an independent audit report, this report could not be accessed on the website. It is seen that NGOs that have independent audit reports do not have independent audit reports. Financially smaller NGOs do not have independent audit reports.

13. Social Impact Report

Social impact reports are reports prepared by experts in the field that reveal the social, cultural, financial and environmental consequences of any activity on society. Sharing these reports with stakeholders is important for transparency. Thanks to social impact reports, current and potential donors can understand the impact of the relevant NGOs' activities on society. By the help of these reports, they can make a donation decision based on more objective data.

It was reported that only one of the NGOs examined within the scope of the study had a social impact report, but no impact report could be accessed through the link provided. Considering the human resources and financial size of NGOs, it is difficult for low-income NGOs to allocate money and human resources for social impact reports. On the other hand, it is important for environmental NGOs to analyze the social impacts of their activities in order to show the effectiveness of their activities and conflicts of interest. However, it seems that the NGOs subject to the study do not make such efforts.

14. Activity Report

It is important for transparency that the past activities of NGOs operating in any field and collecting donations for these activities are reported accurately and shared with stakeholders. Activity reports are expected to be up to date. All activities carried out during the activity period should be shared in the report in a way that different stakeholders can understand. Activity reports generally include tables of income and expenses for the relevant period, as well as the activities carried out, and independent audit reports, if any. In this context, annual reports can be considered as a period's accountability platform for stakeholders. Preparing a high-quality annual report usually requires professional effort. For many low-budget NGOs, providing a detailed activity report is costly. Therefore, it should be considered natural that there are differences in quality between the activity reports of NGOs.

Activity reports for 2022 and previous years of five of the NGOs within the scope of the study (ÇEKÜL, Mind Your Waste Foundation, TURMEPA, TEMA, WWF) are available. is in the situation. Only the activity report for the year 2021 of the Women in Fisheries Society can be accessed. Activity reports of other NGOs could not be accessed.

15. Conclusion

The donations constitute one of the most important sources of income for NGOs. For many NGOs, donations made by the masses are an important prerequisite for their economic survival. In modern societies, it is possible for individuals to engage in voluntary activities

for charity. When participation in volunteer activities is not possible for various reasons (lack of qualifications, being in a remote area, etc.), it is an increasingly common behavior for people to support NGOs whose activities they want to support by donating. Fundraising is an important corporate activity for many NGOs operating in similar fields.

It is important that donations are regular and sufficient for NGOs to maintain their assets in a stable manner. Meeting donors' requests is a critical element at this point. One of the main expectations of donors is that the donations will be used in the promised areas and in a prudent manner. It is not possible for NGOs that cannot meet this expectation to continue their existence in the long term. Meeting this expectation will be achieved not only through the activities carried out, but also by sharing the activities and managerial procedures with stakeholders in a transparent manner. Therefore, transparency and accountability are seen as a necessity for modern NGOs.

Ensuring transparency is achieved, in many cases, through laws implemented by public authorities. Transparency is a phenomenon that should not be neglected, especially for NGOs that benefit from donations and some other public resources. Transparency provided as required by law is often not sufficient for all stakeholders. Ensuring minimum transparency criteria will only ensure that legal obligations are met. Greater transparency will be possible through self-regulation by NGOs and the voluntary initiatives they are involved in.

Self-regulatory initiatives are organizations that are organized on a voluntary basis and guide and encourage member NGOs to implement the transparency criteria they have determined. In this study, the transparency levels of environmental NGOs that are members of the Açık Açık Platform operating in Türkiye in the context of the self-regulation initiative were examined in the context of the platform.

As a result of the increasing power of environmental NGOs in making economic decisions and the rising environmental awareness in the public, the financial and administrative operations of environmental NGOs require greater transparency. As a reflection of this requirement, the transparency levels of 10 environmental NGOs that are members of the Açık Açık Platform were examined within the framework of the platform's criteria. It has been understood that financially, NGOs (except one) do not use state resources directly. On the other hand, there is no data indicating that NGOs benefit from any tax exemption. When financial data is examined, although expenses are reported, the information provided is not detailed. For example, there is no data on the cost of fundraising activities. Overall spending are not clear what spending cover. No definition has been shared by the platform on this subject. It is seen

that NGOs that receive donations from other institutions and abroad do not disclose the sources of donations (at least on the platform).

Although lists of names of boards of directors and employees are disclosed, the transparency that these lists can provide without qualified CVs will be limited. It is unclear whether the board members have a conflict of interest regarding the activities of the NGO, considering the available information sharing. It has been understood that NGOs, especially those with a relatively high number of employees, do not share certain policies (discrimination, whistleblowing, etc.) that they should share with their employees as a matter of transparency.

In Türkiye, the audit of NGOs is carried out by auditors affiliated with the Ministry of Internal Affairs. Other state institutions may also supervise NGOs in areas within their scope of control. In addition to legal obligations, there is also a legal obligation for NGOs with a certain economic size to be audited by Independent Audit Institutions. It is understood that NGOs that publish independent audit reports within the scope of the platform are financially larger than other NGOs. It is not expected for low-budget NGOs to obtain an independent audit report as it would be costly for them.

The financial and administrative functioning of NGOs may differ in some areas. Therefore, different information may need to be classified and presented to stakeholders in different ways. There are no special criteria regarding the environment (nor in other areas) on the platform. Therefore, information that may be requested by those who consciously want to donate to environmental NGOs is not accessible to stakeholders on the platform.

When looking at the transparency and accountability relationship of the Açık Açık Platform, it is possible to say that it is in the opaque area in Table 2. Although institutions share some information (albeit insufficient) with stakeholders, they do not share information about how they make decisions and how they evaluate the results of decisions. In this form, it is possible to define the platform as a structure established within the framework of a goodwill effort.

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