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The Importance of the Green Economy in the 21st Century and Social Awareness in Combating the Climate Crisis

Abstract

Climate changes have led to a rise in global temperatures, significantly affecting human life. Throughout the billions of years of Earth's history, various climate changes have occurred over time. These changes are not only due to natural causes but are also, in many cases, linked to human activities. The human species, with a history of approximately 300,000 years, has become the dominant species and has continued its struggle for survival over ecological systems. This struggle reached its peak with the Industrial Revolution, during which the impacts of human activities accelerated. The current era has been termed the Anthropocene by scientists studying ecosystems and is characterized as a geological epoch.

As a result of human activities in nature, while attempting to meet their needs from the environment they inhabit, humans have also created threats to their own existence. This threat, which began in the hunter-gatherer period, led to the extinction of many species and problems such as uncontrolled hunting. Over time, with the increase in settlement and agricultural activities, the population grew, and the rising demand for resources caused greater harm to the natural balance. The lifestyles of societies, their cultures, social relations, demands for resources, methods of resource use, and the value they assign to the environment have ultimately moved ecological problems beyond the field of natural sciences into the realm of social sciences, making it an interdisciplinary issue.

Keywords: *climate change, global warming, green economy, climate crisis, social awareness, ecological balance*

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XXI əsrdə yaşıl iqtisadiyyatın əhəmiyyəti və iqlim böhranı ilə mübarizədə sosial şüurun rolu

Xülasə

İqlimdə baş verən dəyişikliklər dünya üzrə temperaturun artmasına səbəb olaraq insan həyatına ciddi şəkildə təsir edir. Milyardlarla illik tarixə malik olan planetdə zamanla müxtəlif iqlim dəyişiklikləri baş vermişdir. Bu dəyişikliklər təkcə təbii səbəblərlə deyil, eyni zamanda bir çox hallarda insan fəaliyyəti ilə də bağlıdır. Təxminən 300 min illik tarixə malik insan növü dominant növə çevrilərək ekoloji sistemlər üzərində yaşamaq uğrunda mübarizəsini davam etdirmişdir. Bu mübarizə sənaye inqilabı ilə birlikdə zirvəyə çatmış və insan fəaliyyətlərinin yaratdığı dəyişikliklər sürətlənmişdir. Ekosistem üzərində çalışan alimlər tərəfindən hazırkı dövr "Antroposen" adlandırılaraq geoloji bir dövr kimi xarakterizə edilmişdir.

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İnsanlıq təbiətdə həyata keçirdiyi fəaliyyətlər nəticəsində yaşadığı mühitdən ehtiyaclarını qarşılamaq istəyərkən, öz həyat fəaliyyəti üçün təhlükələr də yaratmışdır. Ovçu-yığıcı dövrdə başlayan bu təhlükə bir çox növün məhv olmasına və nəzarətsiz ovlanma kimi problemlərə səbəb olmuşdur. Zamanla məskunlaşma və kənd təsərrüfatı fəaliyyətlərinin artması ilə əhali çoxalmış, resurslara olan tələbatın artması isə təbii tarazlığa daha çox zərər vurmuşdur. Cəmiyyətlərin həyat tərzi, mədəniyyətləri, qarşılıqlı münasibətləri, resurslara olan tələbləri, bu resurslardan istifadə üsulları və ətraf mühitə verdikləri dəyər nəticə etibarilə ekoloji problemləri təbiət elmləri sahəsindən çıxararaq sosial elmlər sahəsinə də daxil etmiş və onu fənlərarası bir mövqeyə gətirmişdir.

***Açar sözlər**: iqlim dəyişikliyi, qlobal istiləşmə, yaşıl iqtisadiyyat, iqlim böhranı, sosial şüur, ekoloji tarazlıq*

Introduction

The climate crisis is one of the greatest global challenges of our time. The rapid increase in greenhouse gas emissions into the atmosphere has led to rising global temperatures, more frequent extreme weather events, and the disruption of natural ecosystems. This situation is not only an environmental issue but also a crisis that threatens humanity in economic and social dimensions.

However, combating this crisis is not only the responsibility of governments or international organizations but also a shared responsibility of individuals and societies. Social awareness enables individuals to understand environmental problems and take action to solve them. The level of social awareness plays a critical role in addressing the climate crisis. This study aims to raise awareness within society and encourage concrete actions. It emphasizes the importance of individual and collective change for a sustainable future.

Research

The increase in global surface temperatures and the resulting climate changes have critically affected human life. Although similar climatic changes have occurred throughout the billions of years of the planet's history, it is noteworthy that today's changes are largely driven by human activities rather than natural phenomena. Millions – even trillions, if even the simplest life forms are included – of species have existed on Earth since the beginning of life, and more than 99% of them have become extinct at different periods.

With a history of approximately 300,000 years, the human species has increased its capacity for survival over time, becoming a dominant species. While it has remained passive under certain conditions, it has also reached a position powerful enough to exert pressure on all ecological systems. This influential role peaked with the Industrial Revolution. Scientists focusing on the changes caused by human activities and their impacts on ecosystems have defined the current period as the "Anthropocene," characterizing it as a geological epoch (Crutzen, 2002; Crutzen & Stoermer, 2000). In this context, scientific studies suggest that due to human-induced (anthropogenic) effects, we are facing a threat of extinction referred to as the Sixth Mass Extinction, which has led to the extinction or endangerment of many species (Barnosky et al., 2011; WWF, 2018). The ecological environment, transformed and still being transformed by human influence, poses threats not only to other species but also to the survival of humanity itself (Kolbert, 2020). Despite humanity strengthening its position as the dominant species on the planet and, especially since the 16th century, adopting a mechanistic view of nature that places humans at the center – viewing nature as a tool under human control to meet all needs without restraint (Gül, 2013; Sulak, 2018; Yaylı, 2006) – these examples demonstrate that nature can pose threats to all economic, social, and societal structures of human life, as well as to human existence itself. Human interventions in ecological systems, whether conscious or unconscious, have led to disruptions in natural balance in various ways. In seeking to meet its needs from the environment, humanity has created imbalances in ecological systems, ultimately generating threats to its own survival. The earliest interventions date back to the hunter-gatherer period, involving activities such as the destruction of plant species and uncontrolled hunting. The Enlightenment – also known as the Age of Reason – with its strong belief in reason and science as the primary guides, led to scientific, cultural, and economic transformations. In this context,

industrialization (Sulak, 2018; Yaylı, 2006; Zariç, 2017) became one of the most significant turning points in human history. The lifestyles of societies, their cultures, relationships, demands for resources, methods of resource use, and the value attributed to the environment have ultimately positioned environmental issues within an interdisciplinary framework. Even in ancient times, philosophers emphasized conflicts arising from resource scarcity, particularly in the context of political relations between states and societies. From the Industrial Revolution to the present, environmental degradation has become far more severe and has shifted from local to global-scale problems. The use of fossil fuels during industrialization gave rise to energy-dependent societies. With rapid population growth and urbanization, energy demand increased significantly, and as energy production and consumption expanded, this demand continued to grow. The rise of liberalism during the Enlightenment, along with capitalism shaped by individualism and freedom, accelerated the search for raw materials, colonization, and the expansion of market economies (Gencer, 2013, p. 245; Özmaden, 2019, pp. 54–55). This process progressed in direct proportion to increasing environmental pressures (Ponting, 2012). The 20th century marked the peak of these destructive processes. Environmental damage caused by nuclear weapons testing (D'Alisa et al., 2020; Prăvălie, 2014); the Green Revolution, which rapidly increased food production through the use of chemical fertilizers and pesticides since the 1940s and its negative impacts on soil fertility, biodiversity, and groundwater (Kumar, 2017); the depletion of the ozone layer due to chlorofluorocarbon (CFC) gases used in refrigeration and other products (American Chemical Society, 2017); and global climate changes caused by greenhouse gas emissions are among the most evident examples of human-induced environmental degradation. Human activities have increased the emission of these gases, thereby raising their concentration and accumulation in the atmosphere (Cubasch et al., 2007, p. 100; Ponting, 2012). In 1988, NASA scientist James Hansen emphasized that rising temperatures were not natural but were caused by increasing concentrations of greenhouse gases in the atmosphere due to human activities (Renner, 2015). Despite humanity's increasing dominance and the long-standing mechanistic understanding of nature, which views it as a controllable resource, the examples discussed clearly demonstrate that nature can pose serious threats to human existence and all related economic and social systems. Particularly in the 20th century, environmental destruction reached its peak. The mechanistic understanding of nature that developed during the Enlightenment – led by thinkers such as Bacon, Descartes, and Newton – began to be questioned alongside critiques of modernity. This perspective has continued to be critically examined, especially since the 1960s, through the rise of ecological thought and ongoing scientific research.

Climate Justice. The climate crisis also brings forward issues of justice in an intergenerational sense, that is, in relation to the rights of those not yet born. In this context, ensuring climate justice requires acknowledging that the decisions, actions, consumption patterns, and lifestyles of people living today carry responsibilities toward future generations, given their negative impacts on the planet. One of the most significant steps taken to address the climate crisis was the establishment of the United Nations Framework Convention on Climate Change (UNFCCC) at the Rio Earth Summit in 1992, held under the auspices of the United Nations Environment Programme (UNEP) with the participation of both state and non-state actors. The UNFCCC was opened for signature at the United Nations Conference on Environment and Development held in Rio in 1992. The Convention recognizes that changes in the climate system and their adverse effects are a common concern of humanity, emphasizing the role of human activities and aiming to prevent the accumulation of greenhouse gases in the atmosphere (UNFCCC, 1992, pp. 1–2). As stated in Article 2, the ultimate objective of the Convention is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a timeframe sufficient to allow ecosystems to adapt naturally to climate change and to ensure that economic development proceeds sustainably.

United Nations Framework Convention on Climate Change. In response to the impacts of human-induced global warming on the climate, as identified by the Intergovernmental Panel on Climate Change (IPCC), established jointly by UNEP and the World Meteorological Organization (WMO) in 1988, the United Nations Framework Convention on Climate Change (UNFCCC) was opened for

signature at the United Nations Conference on Environment and Development (Rio Earth Summit) held between 3-14 June 1992. The Convention currently has 197 parties, including Türkiye. Its objective is to stabilize greenhouse gas concentrations in the atmosphere at a level that prevents dangerous human-induced interference with the climate system, based on the principle of equity and common but differentiated responsibilities. It also aims to encourage cooperation in research and technology and to protect greenhouse gas sinks, achieving these goals within a timeframe that allows ecosystems to adapt naturally and supports sustainable economic development.

Vienna Convention and the Montreal Protocol. The Vienna Convention and the Montreal Protocol became the first universally ratified agreements in United Nations history, with approval from 197 parties, including 196 states and the European Union. Due to their wide adoption and implementation, they are considered outstanding examples of international cooperation. The objectives of the Vienna Convention were to promote cooperation through research, information exchange, and systematic observation regarding the effects of human activities on the ozone layer, and to adopt legal or administrative measures against activities likely to harm it. However, the Convention did not impose binding obligations to reduce ozone-depleting substances. Therefore, in line with its provisions, countries later adopted the Montreal Protocol.

Kyoto Protocol. The Kyoto Protocol is the only international framework aimed at combating global warming and climate change under the UNFCCC. Countries that signed the protocol committed to reducing emissions of carbon dioxide and five other greenhouse gases or, if unable to do so, increasing their emission allowances through carbon trading. The Protocol requires countries to reduce their emissions to 1990 levels. Although signed in 1997, it entered into force in 2005, as it required ratification by countries responsible for at least 55% of global emissions – a threshold only reached with Russia's participation after eight years.

Paris Agreement. The Paris Agreement, which establishes the framework for the post-2020 climate regime, was adopted at the 21st Conference of the Parties (COP21) to the UNFCCC in Paris in 2015. For the first time, all countries committed to reducing greenhouse gas emissions on a global scale. The Agreement entered into force on 4 November 2016 after at least 55 parties representing 55% of global emissions ratified it. It aims to limit the global temperature increase caused by human-induced greenhouse gas emissions to well below 2°C above pre-industrial levels, while emphasizing efforts to limit the increase to 1.5°C. It also reaffirms the principle of "common but differentiated responsibilities and respective capabilities."

The Impact of Climate Change on Society. The climate crisis is one of the most complex and multidimensional challenges of the 21st century. Since the Industrial Revolution, increased greenhouse gas emissions have raised global average temperatures by approximately 1.2°C. However, this increase has gone far beyond temperature measurements – it has disrupted food security, depleted water resources, intensified natural disasters, and fundamentally shaken societal structures. Greenhouse gas emissions occur at every stage of food production and consumption due to energy use. Climate change has predominantly negative effects on agricultural production processes. While impacts vary by region, staple crops such as wheat, rice, and maize are adversely affected, especially in tropical and temperate regions. Urban areas, with high population density and economic activity, are among the most vulnerable to climate change, while rural areas – where agriculture is the primary livelihood and where approximately 70% of the poor in developing countries reside – are also heavily impacted. Studies show that extreme weather events often lead to increases in food and agricultural prices (Porter et al., 2014). Crop shortages, rising prices, and reduced access to food contribute to food insecurity, affecting availability, access, consumption, and price stability (IPCC, 2014a; Porter et al., 2014). Climate change's impact on food security is evident and may also pose threats to national security. For instance, severe droughts in Syria between 2006 and 2010 have been linked to food shortages that contributed to the 2011 protests and subsequent conflict (De Châtel, 2014; Gleick, 2014; Kelley, 2014). Agriculture being a primary source of income in rural areas, climate-related impacts – especially extreme weather events – act as push factors for rural-to-urban migration (Dasgupta et al., 2014; IPCC, 2014a, p. 48). Climate change also affects economic sectors differently. It alters supply and demand for goods and services, influenced by both

physical changes and socioeconomic factors such as population, income, and lifestyle. For example, rising temperatures may reduce demand for heating but increase demand for cooling. Tourism is among the most affected sectors. While higher-altitude or polar regions may benefit, other regions face economic losses due to reduced snowfall. Countries like the Maldives face severe risks from sea-level rise. Ecosystems such as rainforests and coral reefs are also under threat due to climate change and human activities (Acar, 2020; Arent, 2014). The insurance sector, particularly property insurance, is also at high risk due to the increasing frequency and severity of climate-related disasters, which may lead to financial instability or even bankruptcy (Alper & Anbar, 2008). Finally, climate change has serious impacts on human health. Rising temperatures, changing precipitation patterns, and increased extreme weather events such as floods, droughts, and wildfires can lead to long-term health issues and even mortality. Vulnerable populations, especially the poor, are disproportionately affected due to limited access to resources, infrastructure, and resilience mechanisms (Olsson et al., 2014; IPCC, 2014a, p. 51).

Educational Outcomes. Research on climate change education focuses on how education currently is and how it should be. In this context, various themes have been identified through analyses of different studies. In one study, 49 works from the EBSCOhost database and, in another, a systematic review of studies conducted between 1993-2014 revealed that education should be interdisciplinary, personally meaningful, active, engaging, participatory, creative, and emotion-oriented (Monroe et al., 2019; Rousell et al., 2020). In two studies conducted to identify gaps in the research questions of articles published in the journal Environmental Education Research, key points were determined (Reid, 2019a, 2019b). Another study examined references to extreme weather events, identified gaps in developing countries, and explored the ethical dimensions of these gaps, focusing on the impacts of climate change (Trenberth et al., 2015). In an analysis of 92 peer-reviewed studies on climate change communication and education, which examined content, visualization, framing, and audience segmentation, it was concluded that barriers to public participation in climate change communication and education should be addressed at different levels (Wibeck, 2014). Another common theme identified across studies is experimental research. Another area of climate change research focuses on curricula. A three-stage study involving bibliometric analysis, online surveys, and case studies was conducted in universities across 45 countries to examine the inclusion of climate change in academic programs. The findings emphasized the necessity of integrating climate change into university curricula (Filho et al., 2021). Another study discussing why climate change should be included as a disciplinary subject in school curricula drew on evidence from curriculum theory, cognitive psychology, and philosophy of science (Eilam, 2022). Another aspect of climate change education concerns the characteristics of textbooks. Studies analyzing earth and environmental science textbooks found that their conceptual scope and presentation of scientific concepts may reinforce students' misconceptions and increase their confidence in these misunderstandings. It was concluded that textbooks are not designed with students' common misconceptions in mind (Choi et al., 2010). Although numerous studies on climate change have been conducted from the work of John Tyndall in the 19th century to the present, there remains a significant gap in the international literature regarding the teaching of climate change (Beasy et al., 2023). A similar situation is observed in the limited number of studies conducted in Türkiye.

Cultural Outcomes. The first workshop on climate change and cultural heritage was held in 2007 in Ravello, Italy, organized by the European University Cultural Heritage Center (Lefevre & Sabbioni, 2010). In 2008, the World Monuments Fund (WMF) organized a panel at the George Wright Society Conference with experts in green building, nature conservation, and historic preservation to discuss the threats posed by climate change to natural and cultural assets (Erdoğan, 2022). The increasing number of international studies has raised awareness about the impact of climate change on cultural heritage, leading conservation experts to conduct more research in this field. After 2015, cultural heritage began to be included in climate change policies (Lefevre & Sabbioni, 2018). In this context, steps have been taken to prevent climate change, protect cultural heritage as documentary evidence, and reduce the impacts of climate change on such heritage. However, these efforts have not yet reached a sufficient level, and more comprehensive solutions are

still needed. Cultural heritage consists of both tangible and intangible elements created by past societies, which have survived to the present and become the shared heritage of humanity. These are valuable assets that provide information about the historical, cultural, architectural characteristics, and ways of life of societies, serving as a bridge between the past and the future.

Migration. Global climate change has evolved from being merely an environmental issue into a global crisis, particularly emphasized by climate policy advocates. As former UN Secretary-General Ban Ki-moon once stated, "climate change does not carry a passport and recognizes no national borders." These changes have become triggers of multi-layered crises with economic, social, and political impacts. Especially in fragile regions such as Africa, the Middle East, and South Asia, water scarcity, drought, and natural disasters not only cause ecological destruction but also lead to social unrest, armed conflicts, and mass forced displacement. Migration, urbanization, securitization, militarization, and international aid policies emerge both as outcomes of these processes and as factors that reproduce them. In this context, this observation report aims to examine, through a multidisciplinary approach, the conflicts, migration dynamics, economic losses, and international diplomatic responses caused directly and indirectly by climate change. Climate-induced forced displacement is addressed within the framework of "environmental migration." Castells' theory of the "network society" and Bauman's concept of "liquid modernity" provide important insights into understanding new forms of migration. Migration is not only a movement of people but also a crisis in which issues of identity, belonging, and security are reshaped. Giddens' concept of the "modern risk society" is also crucial in explaining how environmental threats create insecurity for individuals and communities. These theoretical foundations demonstrate that the relationship between migration and climate change has not only physical but also social and political dimensions.

Conclusion

This study reveals the multidimensional and interconnected nature of education, cultural heritage preservation, and migration dynamics in combating climate change. The findings indicate that the climate crisis is not merely an environmental issue but a global phenomenon with significant social, economic, and political consequences (IPCC, 2023).

Therefore, the necessity of addressing solution processes through an interdisciplinary approach becomes evident. Findings related to education demonstrate that climate change education should be more participatory, interdisciplinary, and practice-oriented. Education plays a critical role in raising environmental awareness among individuals (Monroe et al., 2019; Rousell & Cutter-Mackenzie-Knowles, 2020).

However, the inadequacy of current curricula and instructional materials may lead to conceptual misunderstandings among students (Choi et al., 2010). This situation necessitates the restructuring of educational policies. From the perspective of cultural heritage, climate change poses serious threats to both tangible and intangible cultural assets. Although awareness in this field has increased in recent years, it is evident that protection policies remain insufficient and require more comprehensive strategies (Fatorić & Seekamp, 2017).

Migration emerges as one of the most critical consequences of climate change. Forced displacement driven by environmental factors profoundly affects social structures and international relations. In this context, climate-induced migration is not merely a physical movement but also a process of social and political transformation (Black et al., 2011).

In conclusion, combating the climate crisis requires a holistic approach that integrates education, cultural heritage preservation, and migration policies. Increasing societal awareness, developing sustainable policies, and strengthening international cooperation constitute the fundamental pillars of this process (IPCC, 2023)

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