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EU TRADE

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## DIGITAL TRANSITION: PATHWAY TO SUSTAINABLE GLOBAL TRADE

Prof. Dr.Rana ATABAY KUŞÇU

The digital transition, in conjunction with the European Green Deal, has paved the way for a greener and more sustainable future in global trade. By leveraging digital technologies, European countries have streamlined their economies, reducing carbon emissions and promoting eco-friendly practices. According to Eurostat, by 2022, digitalized industries in Europe reduced their greenhouse gas emissions by 15%, contributing significantly to the objectives outlined in the European Green Deal.

The integration of digital solutions has also enhanced supply chain efficiency, allowing businesses to optimize routes, reduce wastage, and minimize environmental impact. E-commerce platforms, driven by digital technologies, have enabled a shift towards circular economies, promoting recycling and reducing the carbon footprint associated with traditional retail.

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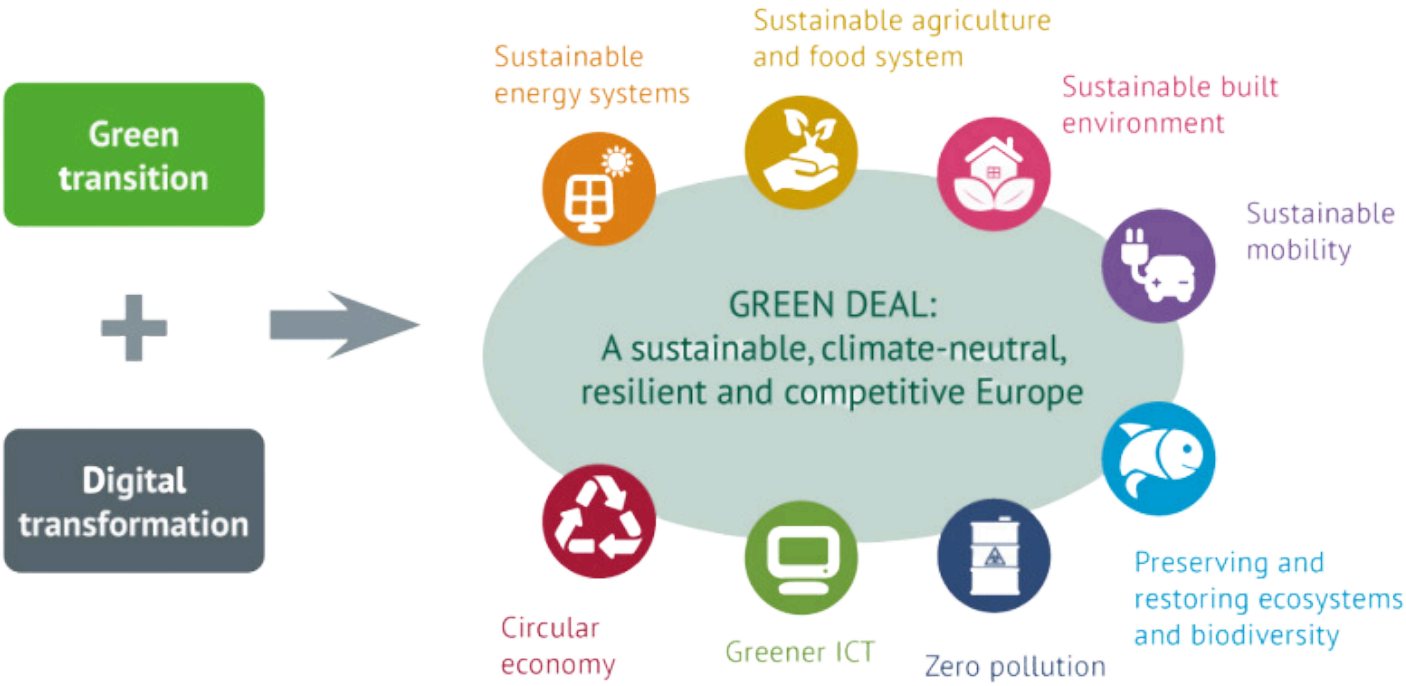
Furthermore, the European Green Deal's emphasis on renewable energy sources aligns with the digital transition, powering data centers and digital infrastructures with clean energy. As of 2022, 32% of Europe's electricity came from renewable sources, fostering sustainable digitalization and promoting eco-conscious global trade practices.

In conclusion, the symbiotic relationship between digital transition and the European Green Deal underscores the potential for environmentally conscious global trade. The adoption of digital technologies not only enhances economic growth but also contributes significantly to the reduction of environmental impact, paving the way for a more sustainable future in international commerce.

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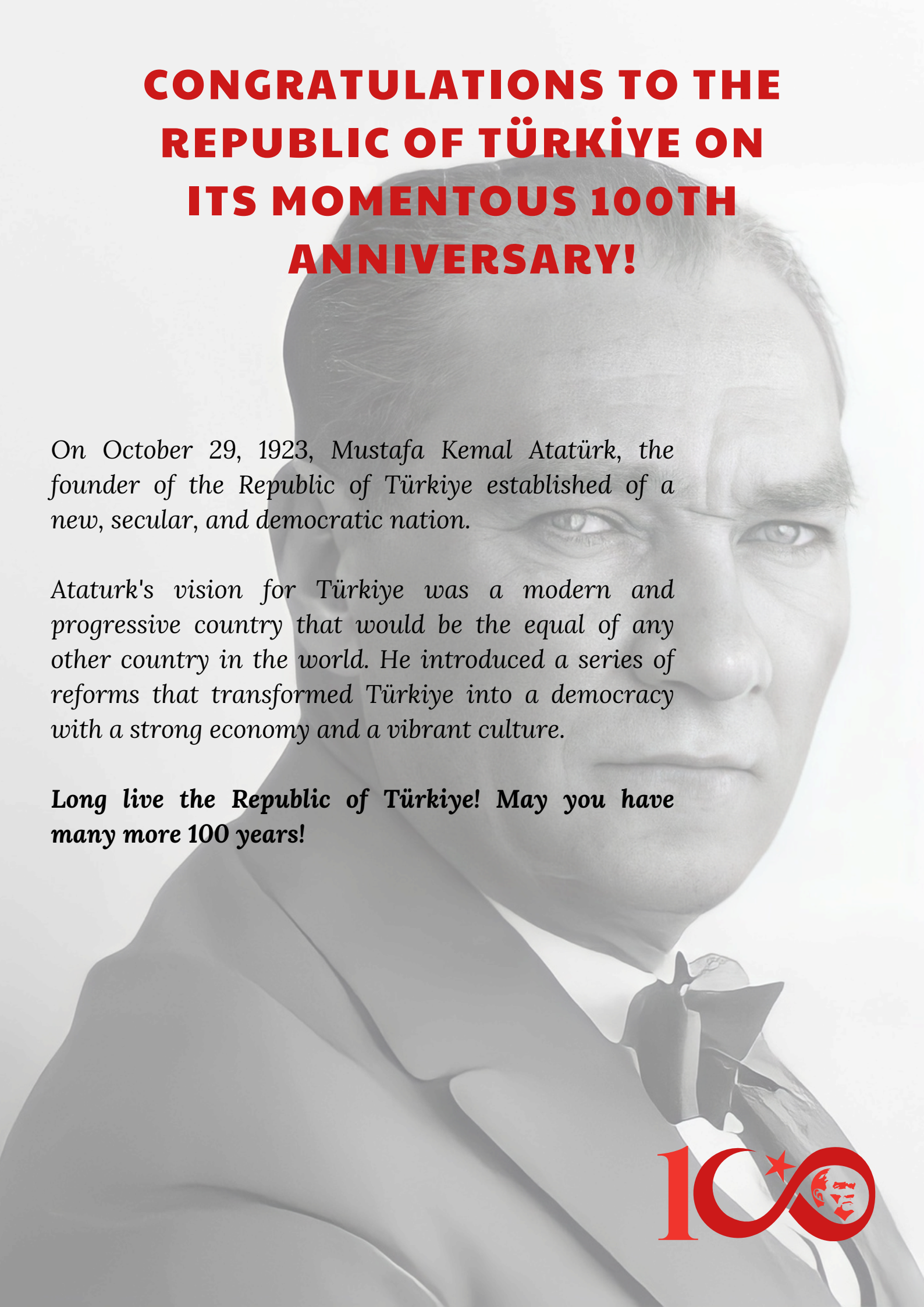
# CONGRATULATIONS TO THE REPUBLIC OF TÜRKİYE ON ITS MOMENTOUS 100TH ANNIVERSARY!



*On October 29, 1923, Mustafa Kemal Atatürk, the founder of the Republic of Türkiye established of a new, secular, and democratic nation.*

*Ataturk's vision for Türkiye was a modern and progressive country that would be the equal of any other country in the world. He introduced a series of reforms that transformed Türkiye into a democracy with a strong economy and a vibrant culture.*

***Long live the Republic of Türkiye! May you have many more 100 years!***

# The Role of Digitalization in Circular Innovation

**Assoc. Prof Rosen Dimov, PhD**

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In recent years, the concept of circular innovation has gained prominence in the field of research and development, particularly within the context of projects funded by the European Union (EU). Circular innovation, rooted in the principles of a circular economy, is a multifaceted approach that aims to reduce waste, extend product lifecycles, and minimize environmental impacts through resource optimization and sustainable practices (Ellen MacArthur Foundation, 2013). This essay explores the pivotal role that digitalization plays in advancing circular innovation, focusing on key aspects such as resource optimization, supply chain management, and product lifecycle extension. Additionally, this essay discusses emerging trends in the integration of digitalization into circular innovation strategies, addressing both opportunities and challenges.

**Digitalization and Resource Optimization**

Resource optimization is a fundamental pillar of circular innovation. It involves the efficient use and management of resources to minimize waste and environmental impact. Emerging trends in digitalization are poised to enhance resource optimization efforts further. One of the emerging trends is the application of machine learning and advanced data analytics in resource management. Machine learning algorithms can analyze vast datasets to identify patterns and inefficiencies in resource utilization, leading to more informed decisions for resource allocation and circular product design (European Commission, 2019). Such predictive analytics can revolutionize resource management in international projects, optimizing resource use in real-time. Another emerging trend is the use of digital twin technology, which creates virtual replicas of physical systems or processes. Digital twins enable organizations to simulate and test resource optimization strategies before implementing them in the real world. For example, in manufacturing, digital twins can be used to fine-tune production processes to minimize material waste and energy consumption (Schleich et al., 2021). Harnessing digital twin technology can lead to more efficient resource management and cost savings.

**Digitalization and Supply Chain Management**

Efficient supply chain management is crucial for circular innovation, and emerging trends in digitalization are reshaping supply chain practices. Blockchain technology continues to evolve as an emerging trend in supply chain management. It provides secure and transparent record-keeping, essential for tracking the provenance of materials and products in a circular economy (Petrovich et al., 2020). Blockchain's decentralization and tamper-proof nature ensure trust and traceability throughout the supply chain.

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Additionally, the Internet of Things (IoT) is becoming increasingly sophisticated in its applications. IoT sensors and devices are now capable of tracking not only location but also environmental conditions, allowing for precise monitoring of goods and materials during transportation and storage (Ghadge et al., 2019). This level of granularity in supply chain data can lead to more precise decision-making and improved resource efficiency. Furthermore, digitalization is driving the trend of "smart contracts" in supply chain management. Smart contracts, enabled by blockchain technology, automatically execute and enforce agreements when predefined conditions are met. This trend reduces the need for intermediaries and paperwork, streamlining supply chain processes (Makhdoom et al., 2022). In EU-funded projects focused on circular innovation, the integration of smart contracts to enhance supply chain efficiency is fostered.

**Digitalization and Product Lifecycle Extension**

Extending the lifecycle of products is a core objective of circular innovation, and emerging trends in digitalization support this goal. 3D printing, which was mentioned earlier, continues to advance as an emerging trend. It allows for on-demand manufacturing of spare parts and even entire products, reducing the need for stockpiling and minimizing waste (Ellen MacArthur Foundation, 2019). The continued development of more sustainable 3D printing materials further aligns with circular innovation objectives. Moreover, the trend of "digital passports" for products is gaining momentum. Digital passports provide detailed information about a product's origin, materials, and maintenance history, making it easier for consumers and businesses to make informed decisions about product reuse and refurbishment (World Economic Forum, 2021). Exploring the implementation of digital passports in circular innovation projects can contribute to enhanced product lifecycle extension.

**Emerging Challenges and Opportunities**

While digitalization offers significant opportunities for circular innovation, it also presents emerging challenges. One of these challenges is the ethical and sustainable sourcing of digital technologies themselves. The production of electronic devices and components can have negative environmental and social impacts (Belkhir & Elmeligi, 2018). Addressing this challenge requires a holistic approach to ensure that digitalization aligns with circular economy principles. Additionally, emerging challenges include data security and privacy concerns, particularly as more sensitive information is shared across digital platforms (Cirani et al., 2019). Ensuring robust cybersecurity measures and complying with data protection regulations are paramount. However, these emerging challenges also create opportunities for innovative solutions. For instance, the development of sustainable and recyclable electronics is an emerging trend that can mitigate the negative environmental impact of digitalization (Blyler et al., 2021). Moreover, the trend of circular design thinking emphasizes the importance of considering end-of-life scenarios for digital devices and technologies, encouraging eco-friendly design choices (Kapila et al., 2020).

In conclusion, digitalization plays a pivotal role in advancing circular innovation within the context of international projects funded by the EU. Emerging trends in digitalization are reshaping resource optimization, supply chain management, and product lifecycle extension. While challenges exist, addressing them presents opportunities for sustainable and innovative solutions. Embracing these emerging trends in digitalization aligns with EU sustainability goals and contributes to the advancement of circularity in diverse industries.

# EU NEWS

## 12th Development Plan for the Period 2024-2028 Adopted

The 12th Development Plan for Türkiye, covering 2024-2028, highlights a significant shift in energy production and consumption. While acknowledging the continued reliance on oil, the plan emphasizes the increasing role of clean energy sources like solar, wind, and nuclear power. New technologies such as carbon capture, green hydrogen, and advanced batteries will gain prominence, leading to a substantial reduction in global emissions. The plan also addresses the rising demand for critical minerals in the energy sector, emphasizing the need for a cost-effective and sustainable supply chain.

Additionally, the plan outlines measures to promote environmental sustainability, focusing on mitigating climate change through green and digital transformation in the industrial sector. Incentives will be provided to support clean energy production, energy efficiency, sustainable transportation, and circular economy initiatives. To minimize the negative impact of end-of-life equipment like solar panels and batteries, the plan emphasizes the expansion of recycling facilities, facilitating the transition to a circular economy.

***For more detail***

## EU's greenhouse gas emissions dropped last year, but accelerated efforts still needed to meet ambitious 2030 targets

In 2022, European greenhouse gas emissions saw a 2% reduction compared to the previous year, with notable decreases in buildings and industrial sectors, though energy supply and transport emissions increased. To reach their 2030 emission reduction target, the European Environment Agency (EEA) emphasizes the need to more than double the annual progress seen since 2005, particularly in road transport, buildings, agriculture, waste, and small industries. The expansion of renewable energy sources, such as wind and solar, is a bright spot, with their share in electricity production surpassing 20% in 2022, and solar deployment growing by 28%. Electric vehicles also gained traction, accounting for 22% of new car sales in 2022.

Member States have introduced over 3000 policies and measures to achieve climate goals, projecting a 48% reduction in greenhouse gas emissions by 2030, up from 41% last year. While this reflects increased ambition, it still falls short of the 55% EU climate target, highlighting the need for further action.

**For more detail**

## More circular, less carbon: chemical recycling holds promise for wind-turbine blade waste

Researchers are proposing chemical recycling as a promising solution for the end-of-life challenge posed by wind turbine blades, a key issue in the renewable energy sector. While renewable energy technologies are essential for sustainability, they generate end-of-life waste, particularly from aging wind turbines deployed in previous decades. The disposal of composite blades, which are complex, large, and heavy, has been a significant challenge, often leading to landfilling or incineration. By 2030, the EU is expected to produce a staggering 570 million tonnes of blade waste.

In alignment with the EU's Waste Framework Directive, efforts are being made to prioritize circular and sustainable solutions, such as prevention, re-use, recycling, and recovery, before resorting to landfilling. The EU's Circular Economy Action Plan, established in 2020, aims to minimize waste generation and enhance resource circulation. Furthermore, the Renewable Energy Directive and the European Green Deal promote cleaner energy transitions and strive for lower environmental impacts throughout the life cycle of renewable technologies. These efforts are crucial to achieving the EU's ambitious goal of net greenhouse gas emissions and climate neutrality by 2050.

**For more detail**

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## Digital Transformation from Renewable Energy Perspective

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The 21st century is bringing huge transformations into our lives. We changed our behaviors, habits, and consumption. Like individuals, companies have changed their solid habits, such as their production and management processes. For example, energy companies started to gain importance in every sector as companies turned to renewable energy and resources. However, it is not easy to use 100% renewable energy in companies, because companies have to transform every detail into energy sufficient. Moreover, the cost of this transformation will be high for them. At this point, the management has a very important task. Especially after the COVID-19 outbreak, management has become a part of the giant digital world. With the transformation of energy from fossil to renewable, digitalization has also been transformed. Digital transformation is defined as the integration of digital technologies into all aspects of business operations. This means identifying how technologies will be used to introduce new products and services, improve existing products and services, and streamline processes.

In this way, management software that optimizes its operations and, as a result, energy services, plays a role in digitalization. It also helps these businesses overcome challenges such as productivity and growth. The environmental objectives of the European Union require the support of digitalization, both in power generation and in the management of connected electricity infrastructure. Due to the variability of renewable generation technologies such as photovoltaic and wind, information needs to be acquired, processed and transmitted quickly and in large quantities. The objectives of the European Recovery Plan, which include reducing greenhouse gas emissions, increasing the use of renewable energy and increasing energy efficiency, create the need to increase renewable energy and complete the defossation cycle. On the other hand, there is a huge demand for renewable energy from companies, so they need to transform and adapt to digitalization because if they are not part of this digital transformation, they will be left behind compared to other companies. In particular, one of the main motivations in the transformation of energy companies is to reduce their costs. Thus, when companies find a way to reduce their costs while increasing their production capacity, they will start to gain great power in the energy sector. Digital transformation will also be a part of this power. Therefore, digitization is practically seen as a prerequisite to move green technology and energy forward.

## Artificial Intelligence: A Vital Facilitator of the European Green Deal

Artificial intelligence (AI) is a vital facilitator of the European Green Deal, an ambitious initiative by the European Union (EU) aimed at achieving climate neutrality in Europe by 2050. AI has the potential to expedite the transition to a sustainable and circular economy, minimize greenhouse gas emissions, and enhance the resiliency of our ecosystems. The energy sector is the first of the specific examples of how AI contributes to the European Green Deal.

In order to improve energy optimization and consumption, efficiently integrate renewable energy sources into power grids, and progress new energy storage solutions, etc. situations might get results with the support of AI-based solutions. In the transportation sector, utilizing AI might enable the optimization of traffic flow, decrease congestion, and promote the use of environmentally friendly public transport and electric vehicles. A supported construction and building sector with AI could reduce heating and cooling expenses, improve energy efficiency, and promote smart building systems with ease. The industry sector stands to benefit in numerous areas from AI. For instance, AI may use it to arrange and aims to help reduce waste and pollution in industrial processes, develop sustainable materials, and enhance manufacturing efficiency. In the agriculture sector, artificial intelligence (AI) provides prospects for diminishing the application of pesticides and fertilizers, amplifying crop yields, and advocating ecological farming practices. Moreover, AI grants priceless endorsement to the European Green Deal. For instance, it can foster novel systems that supervise and prophesy environmental circumstances, evaluate and lessen environmental risks, and devise more efficient environmental policies.

**Sercan ASLAN**
**Project Team**
*Medipol Business School, Economics and Finance*

The European Commission acknowledges the significance of AI-based algorithms, projects, and solutions for the European Green Deal, and has launched various schemes to promote the progress and implementation of AI for environmental goals. The Commission has constituted an AI for Climate Task Force and has issued several reports and directives for the utilization of AI in environmental preservation. AI offers valuable prospects to aid Europe in accomplishing its environmental and climate aims. Nonetheless, it is crucial to guarantee that artificial intelligence (AI) is created and executed with accountability and ethical contemplation. The European Commission is devoted to collaborating with stakeholders to guarantee that AI is utilized for beneficial purposes and that the gains are broadly shared.

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# COMMENTS ON SUMMER SCHOOL

**Dilara UÇAR**

*Business School, Dept. of International Trade and Finance, 4th class*

The Green Deal, Sustainable Trade and Türkiye's Integration Summer School was an influential and transformative experience. It included comprehensive curriculum, expert-led panels focused on pressing environmental challenges and innovative solutions.

I would like to thank Prof. Dr. Rana Atabay Kuşçu for being the moderator of this beautiful summer school program.

The program brought a significant impact on the urgency of sustainable practices and climate action by providing participants with the knowledge and motivation to contribute meaningfully to a more sustainable future.

Overall, I am immensely grateful for the chance to have been a part of this summer school program. It expanded my horizons academically and also added valuable skills and experiences that will shape my future in a positive way. Thanks once again for organizing such a remarkable and rewarding summer school program.

# CALL FOR PAPER ANNOUNCEMENT

In the face of escalating environmental challenges and the urgent need for global cooperation, the concept of the Green Deal has emerged as a transformative framework for achieving sustainable development. This holistic approach encompasses environmental protection, economic growth, and social equity.

Türkiye, a country at the crossroads of Europe and Asia, holds a pivotal position for advancing sustainable trade practices and contributing to the success of the Green Deal. The "International Conference on Sustainable Development and Trade" aims to explore the interplay between the Green Deal, Sustainable Trade, and Türkiye's Integration into these processes.

This paper call has made in the Jean Monnet Module - EU project call titled “Green Deal, Sustainable Trade and Türkiye's Integration”. Publications will be published as part of this Europe project.

For more detailed information: you can visit **eutrade.medipol.edu.tr**


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