GREEN ECONOMY IN THE WESTERN BALKANS COMPARED TO EU COUNTRIES

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Abstract

This paper examines the state and advancement of the green economy in the Western Balkans countries compared to European Union (EU) countries. Through a comparative analysis, the study identifies challenges, opportunities, and policy approaches for fostering sustainable economic growth in these regions. The analyses are based on data from international organizations, academic studies, and policy reports, providing an overview of environmental, social, and economic indicators.

Keywords: Green Economy; Renewable Energy; Waste Generation; Eco-Innovation; Climate Action; Sustainable Development.

Introduction

The green economy seeks to promote sustainable development by ensuring a balance between economic growth, environmental conservation, and social inclusion. In recent years, the transition to a green economy has gained momentum worldwide, driven by global commitments such as the Paris Agreement and the European Green Deal. While EU countries have made significant strides in adopting green policies and technologies, the Western Balkans still face many challenges and opportunities in their transition towards sustainability and growth. This paper analyses the progress of the Western Balkans in adopting green economy principles and compares their efforts to those of EU member states. The study focuses on key areas such as renewable energy, waste generation, resource efficiency, climate change mitigation, and green job creation.

Objectives of the Study:

1. Analyze the current state of the green economy in the Western Balkans, focusing on key environmental, economic, and social indicators.
2. Compare the progress of the Western Balkans in green economy development to that of EU member states.
3. Identify the main challenges hindering the green transition in the Western Balkans, including policy gaps, financial constraints, and institutional barriers.
4. Explore potential opportunities for green investments, renewable energy, and eco-innovation in the region.
5. Propose actionable recommendations to align the Western Balkans with EU green economy standards and practices.

Methodology

The research employs a comparative analysis based on:

1. Environmental indicators: Greenhouse gas emissions, renewable energy share, and resource efficiency metrics.
2. Economic indicators: Green investment, eco-innovation, and green job statistics.
3. Policy analysis: Assessment of green policies and frameworks in both regions.
4. Data sources: Eurostat has served as a key source of statistical data, providing standardization and comparability in my analyses. Reports from the European

Environment Agency (EEA), World Bank, United Nations Development Programmed (UNDP), and academic publications.

Green economy definition and principles

The concept of the "green economy" was first introduced in the late 1980s in the report "A Blueprint for a Green Economy" (1989) by economists David Pearce, Anil Markandya, and Edward Barbier. This report emphasized integrating environmental costs into economic systems to promote sustainability. It gained global recognition during the 1992 Rio Earth Summit, where sustainable development policies became central to international discourse. The term was further popularized by the UNEP's Global Green New Deal (2008), linking economic recovery and environmental protection. The green economy represents an approach to sustainable development that integrates economic growth with environmental protection and social inclusion. United Nations Environment Program (UNEP) describes a green economy as one that enhances human well-being and social equity while substantially lowering environmental risks and ecological scarcity (UNEP, 2011). This concept emphasizes an economy that is low-carbon, efficient in resource use, and inclusive for all members of society. Core principles of the green economy include well-being, ensuring prosperity for all; justice, promoting intergenerational equity; planetary boundaries, safeguarding and restoring natural ecosystems; efficiency and sufficiency, emphasizing sustainable production and consumption; and good governance, which ensures accountability and resilience in policy and institutions (Green Economy Coalition, 2012). The transition to a green economy involves moving beyond traditional metrics like GDP to include measures that account for environmental sustainability and social equity. Georgeson et al. (2017) emphasize that such a shift is essential for tracking progress toward truly transformational outcomes that balance economic, ecological, and social dimensions.

Green Economy in the Western Balkans

Current State: The Western Balkans, comprising Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia, face significant environmental and economic challenges. These include high dependency on fossil fuels, low energy efficiency, and limited access to green financing. However, efforts are being made to align with EU standards, particularly through the Energy Community Treaty and national strategies.

Key Challenges:

- Energy dependence: Heavy reliance on coal for electricity generation.
- Policy gaps: Inconsistent implementation of environmental regulations.
- Economic constraints: Limited funding for green projects and low eco-innovation capacity.

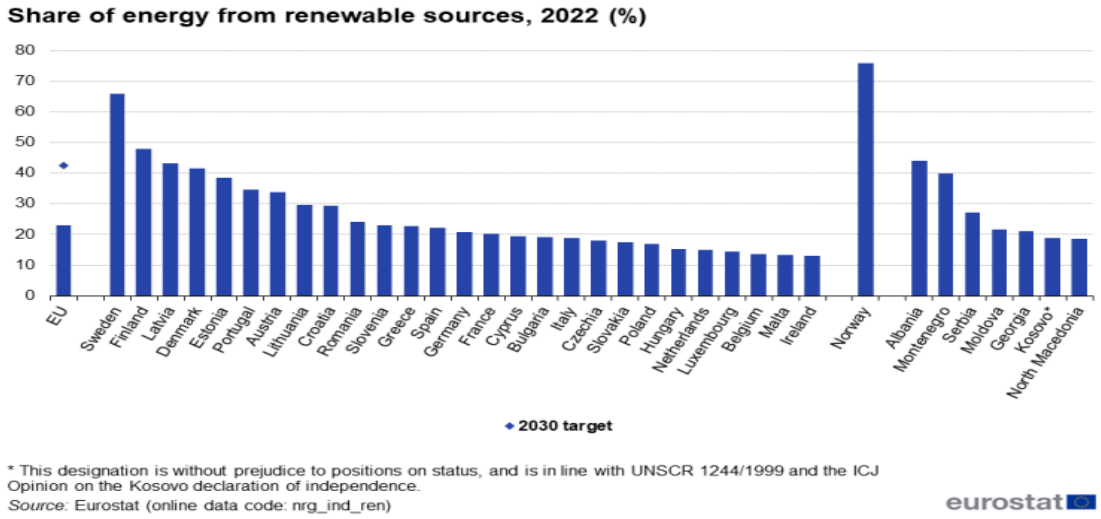
Opportunities:

- Renewable energy potential: Abundant solar, wind, and hydropower resources.
- EU integration: Access to pre-accession funds and technical support.
- Green jobs: Potential for job creation in renewable energy, energy efficiency, waste generation and sustainable agriculture.

Comparison with EU Countries

EU countries benefit from comprehensive frameworks such as the European Green Deal, which sets ambitious targets for carbon neutrality by 2050. In contrast, the Western Balkans is still

developing their policy infrastructure, though efforts like the Green Agenda for the Western Balkans indicate progress. Renewable Energy in the EU and Western Balkans:



European Union (EU):

Renewable Energy Share: In 2022, the EU achieved an average renewable energy share of 22.1% in gross final energy consumption (Eurostat, 2022). This underscores steady progress in the EU's transition toward a sustainable energy future.
2030 Target: Under the Renewable Energy Directive (RED II) and the European Green Deal, the EU has set a binding target of achieving at least 40% renewable energy in gross final energy consumption by 2030 (European Commission). This goal aligns with broader objectives to achieve carbon neutrality by 2050.
Top Contributors: Countries such as Sweden, Finland, and Denmark are leading the way, with renewable energy shares exceeding 40%, thanks to robust investments in wind, bioenergy, and hydropower.
Policy Support: EU-wide mechanisms, such as the Just Transition Fund and Horizon Europe, provide financial support to member states for renewable energy projects. These policies facilitate innovation, infrastructure upgrades, and cross-border energy projects.
Challenges: Despite overall progress, some member states face slower adoption due to permitting delays, resource limitations, and insufficient financial incentives. Countries such as Belgium, Ireland, and Luxembourg remain below the EU average (European Environment Agency, 2022).

Western Balkans

Current Status: Renewable energy shares vary significantly among Western Balkan countries. Albania stands out, with renewables accounting for most of its energy production, primarily from hydropower. Other countries, such as Serbia, Kosovo, and North Macedonia, are still heavily reliant on coal and other fossil fuels (IRENA, 2022).
2030 Target: As part of their integration into the EU, the Western Balkans is expected to align with the EU's 40% renewable energy target by 2030. Achieving this will require substantial investments, policy reform, and international cooperation.
Renewable Energy Sources: Hydropower is the predominant renewable energy source in the Western Balkans, offering clean energy but remaining susceptible to climate variability, particularly droughts. The region also possesses significant potential for solar and wind energy,

especially in coastal and mountainous areas. However, the development of these resources is hindered by limited financial resources and technical expertise (World Bank, 2022).

Challenges:

- Financial Barriers: Many countries lack access to funding and rely on international assistance to develop renewable energy infrastructure (Energy Community, 2022).
- Policy Gaps: Inconsistent energy policies and a lack of clear incentives for private sector investments hinder renewable energy expansion (IRENA, 2022).
- Infrastructure: Outdated grids and transmission systems limit the integration of intermittent renewable energy sources like solar and wind (World Bank, 2022).

Opportunities:

- Collaboration with the EU through programs such as IPA (Instrument for Pre-accession Assistance) and the Green Agenda for the Western Balkans can provide financial and technical support to align with EU energy targets.
- Investments in solar and wind energy could significantly diversify the energy mix, reduce fossil fuel dependency, and enhance energy security in the region (Energy Community, 2022).

Shared Opportunities for Growth:

Both the EU and Western Balkans are committed to achieving the 40% renewable energy target by 2030, a goal that fosters stronger cooperation between the two regions.

Leveraging untapped renewable energy potential - especially in solar and wind energy - can ensure a sustainable and secure energy future for both regions.

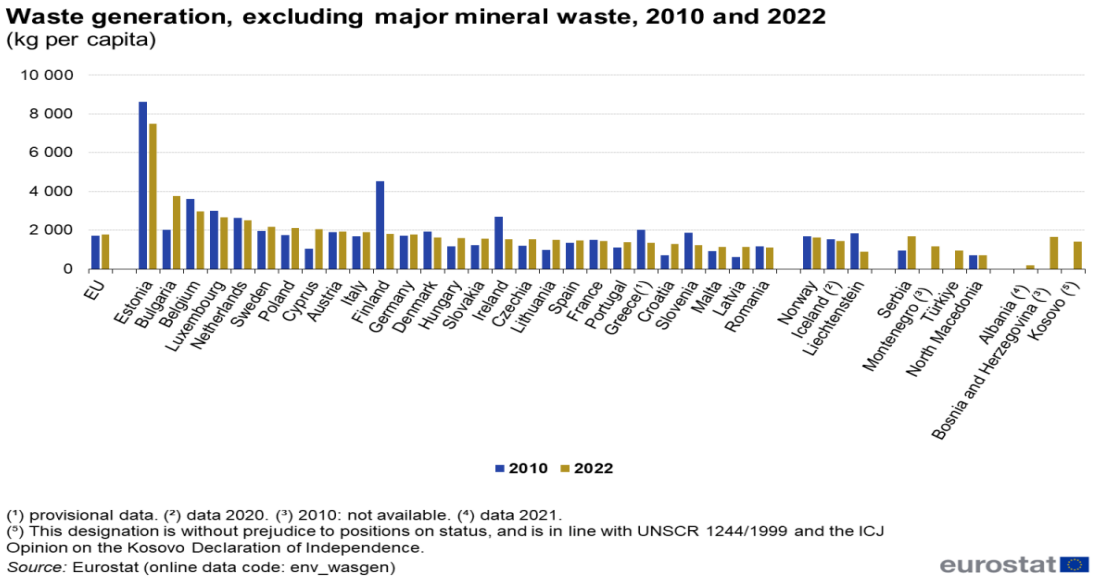
Regional and cross-border renewable energy projects can improve energy connectivity, efficiency, and resilience.

Conclusion on renewable energy

The comparison of renewable energy development between the EU and the Western Balkans highlights significant disparities but also shared opportunities for progress. The EU has made steady advancements, achieving an average renewable energy share of 22.1% in 2022, driven by strong policy frameworks, financial incentives, and technological innovation. Leading countries like Sweden, Finland, and Denmark have already surpassed the 40% renewable energy target set for 2030, thanks to diversified energy mixes that include wind, bioenergy, and hydropower. However, some EU nations still face challenges, particularly in permitting delays and resource constraints. In contrast, the Western Balkans exhibit slower progress, with significant reliance on hydropower as the primary renewable energy source. Countries like Albania are leading in renewable energy share, while others, such as Kosovo and Serbia, remain heavily dependent on coal. Despite these challenges, the region has substantial untapped potential for solar and wind energy, particularly in coastal and mountainous areas. The Western Balkans' ability to meet the 40% renewable energy target by 2030, in alignment with EU standards, will depend on overcoming barriers such as outdated infrastructure, inconsistent policies, and limited access to investment. Collaboration with the EU through initiatives like the Green Agenda for the Western Balkans and access to financial resources via the Instrument for Pre-accession Assistance (IPA) can play a transformative role in accelerating progress. By prioritizing the development of solar, wind, and hydropower projects, modernizing grid infrastructure, and aligning policies with EU directives, the Western Balkans have the potential to significantly increase renewable energy adoption. Enhanced regional cooperation and knowledge-sharing with the EU can pave the way for both regions to achieve their shared climate goals, ensuring energy security and environmental sustainability. To align

with EU green standards, the Western Balkans should set renewable energy targets, simplify permitting, and modernize energy grids. EU funds and private investments can support these efforts, alongside regional cooperation on energy projects. Raising public awareness and creating green jobs through training will ensure lasting progress. Tailored support for countries with specific challenges will help accelerate the transition to renewable energy.

Analysis of Waste Generation in Western Balkans compared to EU



(¹) provisional data. (²) data 2020. (³) 2010: not available. (⁴) data 2021.
(⁵) This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo Declaration of Independence.
Source: Eurostat (online data code: env_wasgen)

eurostat

The chart depicts waste generation per capita (excluding major mineral waste) for EU countries and the Western Balkans from 2010 to 2022.

EU Comparison

- The EU average for 2022 remains consistent with modest variations since 2010.
- Estonia shows the highest per capita waste generation in the EU, attributed to its resource-intensive industries.
- Other EU countries such as Luxembourg, Sweden, and Finland also exhibit high waste generation, partly due to economic activity and higher consumption levels.

Western Balkans

- Western Balkans countries (Serbia, Montenegro, North Macedonia, Albania, and Kosovo) report significantly lower waste generation per capita compared to the EU average.
- Kosovo and Albania are among the lowest, indicating limited waste generation, likely due to lower consumption levels and economic activity.

Key Observations

- Waste Generation Gap: There is a noticeable gap between EU countries and Western Balkans in waste generation per capita. This reflects differences in industrialization, consumption, and waste reporting systems.
- Management Challenges: Lower waste generation in the Western Balkans doesn't imply better waste management. Most waste in the region ends up in landfills, often inadequately managed, leading to environmental and health concerns. Recycling rates remain minimal.
- EU Progress: EU countries are transitioning toward circular economy practices, emphasizing waste reduction, recycling, and reuse. This transition is less evident in the Western Balkans.

Recommendations for the Western Balkans

- Adopt EU Standards: Align waste management policies with EU directives to reduce landfilling and improve recycling rates.
- Infrastructure Investment: Develop modern waste collection and recycling infrastructure.
- Data Collection: Improve data accuracy and transparency to support policy planning and implementation.
- Circular Economy Principles: Promote waste reduction, material reuse, and recycling through public awareness and legislative measures.
- Regional Cooperation: Collaborate with EU countries to share best practices and access funding for waste management projects.

Conclusions on Waste Generation

Despite generating less waste, the Western Balkans faces significant challenges in waste management. Much of the waste is landfilled, often in poorly managed sites, with minimal recycling rates. Meanwhile, EU countries are advancing toward circular economy practices, emphasizing waste reduction, recycling, and reuse. The chart graph shows the differences in waste generation per capita (excluding major mineral waste) between EU countries and the Western Balkans in 2010 and 2022. The EU average in 2022 was around 5,000 kg per capita, with countries like Estonia, Luxembourg, and Finland generating the highest amounts due to resource-intensive industries and high consumption levels. In contrast, Western Balkan countries, including Serbia, Montenegro, North Macedonia, Albania, and Kosovo, reported significantly lower waste generation, below 1,000 kg per capita. Kosovo and Albania had the lowest levels, reflecting lower economic activity, consumption, and incomplete reporting of waste data. To align with EU green economy standards, the Western Balkans should adopt EU-aligned policies, improve waste management infrastructure, and promote public awareness of recycling and waste reduction. Strengthening data collection systems is essential to track progress and inform policymaking. Additionally, leveraging EU funding and collaborating with EU countries can accelerate improvements.

Eco-Innovation in the Western Balkans and EU

Eco-innovation, which focuses on reducing environmental impacts and enhancing resource efficiency through innovation, is a key driver of the green economy. The European Commission's Eco-Innovation Index serves as a comprehensive metric for assessing progress in this domain across countries (European Commission, 2021).

EU Performance

The EU demonstrates strong performance in eco-innovation, driven by investments in research and development (R&D) and policies supporting sustainability. Nordic countries, Luxembourg, and Austria are among the leaders in eco-innovation, showing significant progress in resource efficiency and circular economy practices (European Commission, 2020). From 2014 to 2024, the EU's Eco-Innovation Index has shown a notable improvement of 27.5%, attributed to advances in greenhouse gas emission productivity and sustainable industry practices (European Commission, 2023).

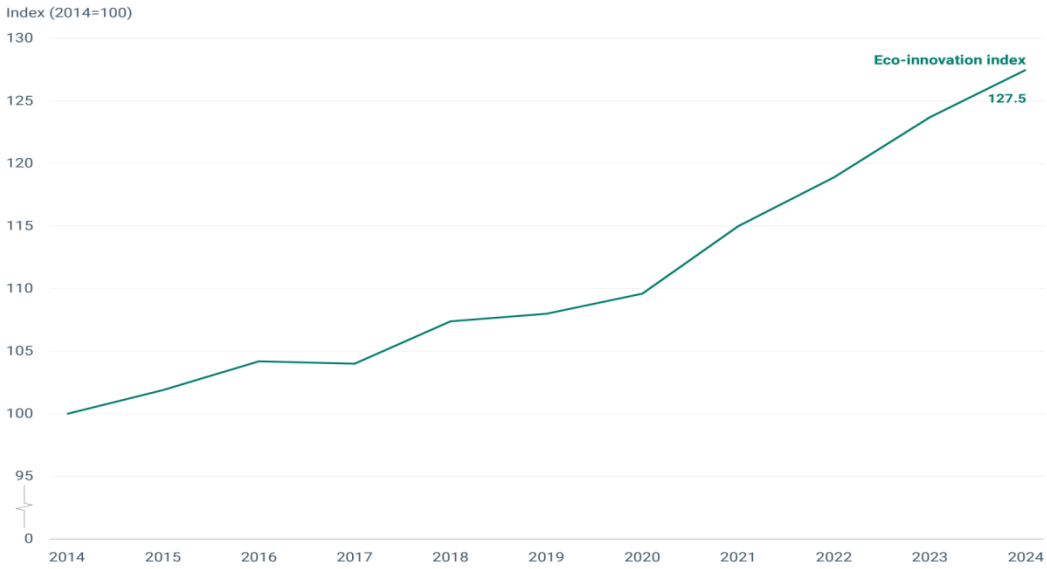


Figure1. Eco-innovation index, EU-27, 2014-2024 (EU-27=100 in 2014

Eco-innovation plays a key role in advancing the European Green Deal goal of shifting toward a carbon-neutral and sustainable economy, and its development has accelerated within the European Union. The eco-innovation index published by the European Commission rose by 27.5% between 2014 and 2024, largely due to gains in resource efficiency. This consistent upward trend is expected to persist, as the European Green Deal establishes ambitious environmental and climate targets. Its related initiatives are likely to further support and stimulate eco-innovation.

Western Balkans Context

The European Commission's Economic and Investment Plan for the Western Balkans, introduced in 2020, emphasizes the importance of smart specialization strategies that incorporate sustainability and environmental priorities to foster eco-innovation in the region. Additionally, the Joint Research Centre's 2024 report highlights the region's challenges, including economic constraints, low R&D investments, and insufficient policy support, which hinder eco-innovation efforts.

Challenges

- Economic Constraints: The lack of financial resources hampers R&D and eco-innovation efforts.
- Institutional Barriers: Weak institutions and insufficient policy alignment with EU frameworks create barriers.
- Data Limitations: Inconsistent data collection makes it challenging to track progress in eco-innovation.

Opportunities:

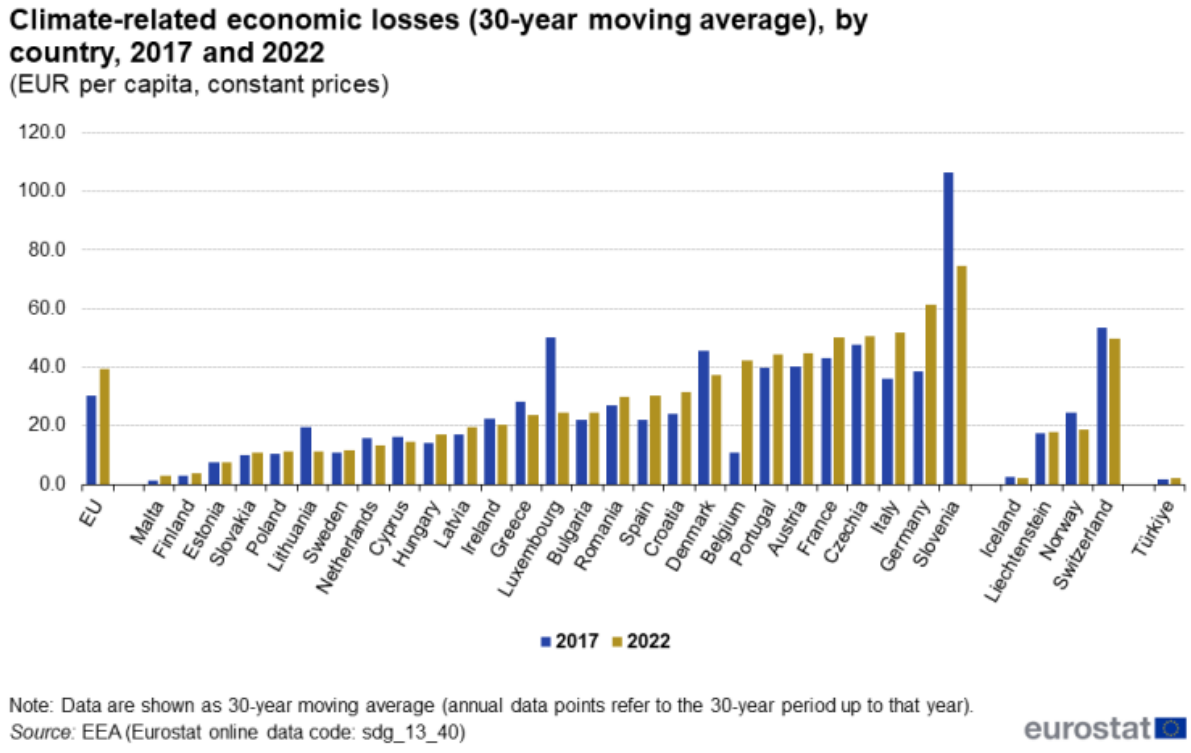
- Aligning waste and resource management policies with EU directives.
- Strengthening R&D investment and innovation ecosystems.
- Improving institutional capacities for policy implementation and monitoring.
- Enhancing data systems to track progress and inform decisions.

Conclusion

While the EU leads in eco-innovation, the Western Balkans is still catching up. Strengthening R&D, aligning policies with EU standards, and improving institutional and data capacities will be a key to advancing eco-innovation in the region.

Climate Actions in Western Balkans and EU

Based on the European Commission's report titled "Status of environment and climate in the Western Balkans," published on December 12, 2024, the Western Balkans is facing significant climate-related challenges. These include increased frequency of heat waves, floods, and droughts, leading to infrastructure damage, crop loss, and economic disruption. Climate change is negatively impacting agricultural productivity due to unpredictable weather patterns, thereby threatening food security and livelihoods. Droughts have become more common, affecting water availability for both consumption and irrigation, and reducing hydroelectric power generation. Furthermore, changes in ecosystems and reduced biodiversity are threatening natural resources, while sectors such as tourism are increasingly vulnerable to extreme weather events. These climate risks present considerable challenges to the region, underscoring the need for more robust adaptation strategies and increased investment in green energy solutions. The European Commission emphasizes the importance of integrating climate adaptation into national policies to effectively address these issues.



The graph illustrates climate-related economic losses as a 30-year moving average (EUR per capita, constant prices) for various countries, comparing data from 2017 and 2022. It provides insight into the financial impact of climate change across EU countries and selected non-EU countries. The EU average shows a slight increase in economic losses from 2017 to 2022. Countries such as Germany, Slovenia, and Italy stand out for their relatively high per capita climate-related economic losses. This can be attributed to their vulnerability to extreme weather events (e.g., floods, heat waves) and the economic value of assets at risk. Nations like Malta,

Estonia, and Slovakia have consistently low climate-related losses. This may reflect either less exposure to extreme weather or limited reporting and valuation of losses. In Germany and Slovenia, losses have significantly increased over time, emphasizing the growing economic burden of climate inaction.

Climate Policies and Initiatives in Western Balkans and EU

The European Union (EU) has laid out a comprehensive climate policy with the European Green Deal as its cornerstone. This deal aims for climate neutrality by 2050, with ambitious targets to reduce greenhouse gas emissions, promote renewable energy, and improve energy efficiency. The EU's climate strategies focus on making the economy more sustainable through policies that address sectors such as energy, transportation, and industry. The European Green Deal also integrates the European Climate Law, which ensures that EU-wide climate policies align with the goal of achieving net-zero emissions by 2050. To support these goals, the EU has implemented the Emissions Trading System (ETS), a market-driven approach to reduce greenhouse gas emissions. The ETS sets a cap on emissions, and companies can trade emission allowances within the market. This mechanism incentivizes companies to reduce emissions in the most cost-effective manner. The EU has also introduced various funding mechanisms to help member states transition to greener economies, including the Just Transition Fund to support regions heavily reliant on fossil fuels (European Commission). On the other hand, the Western Balkans is still in the process of aligning its climate policies with those of the EU. One of the significant milestones for the region is the Green Agenda for the Western Balkans, adopted in 2020. This agenda mirror the EU's Green Deal and focuses on DE carbonization, green energy transition, and environmental protection. Its goal is to align the Western Balkans with the EU's climate objectives and work towards climate neutrality by 2050. The Green Agenda specifically targets issues like reducing the carbon footprint, improving waste management, and enhancing biodiversity, while addressing the region's reliance on coal and other fossil fuels. However, the region faces significant challenges in its transition, including a lack of infrastructure, investment, and political will. Each country in the Western Balkans is also developing National Energy and Climate Plans (NECPs), which are crucial for charting the path toward achieving their energy transition goals. These plans aim to reduce greenhouse gas emissions, increase the share of renewable energy, and improve energy efficiency in line with EU policies. However, the implementation of these plans is often slow and hampered by financial constraints and reliance on energy systems based on coal. This makes the transition to greener energy sources more difficult (European Commission and Climate Action Network Europe). A 2021 World Bank report highlighted that the Western Balkans will need an estimated $32 billion in investment by 2050 to decarbonize their energy systems, with 85% of these investments expected to come from the private sector. This highlights the need for stronger financial mechanisms and better policy alignment to support the green transition

Challenges:

- Frequent extreme weather causing infrastructure damage, crop loss, and economic disruption.
- Reduced agricultural productivity and water scarcity threatening food security and energy generation.
- Ecosystem degradation, biodiversity loss, and vulnerability of tourism to extreme weather.
- Reliance on coal, limited infrastructure, and slow alignment with EU climate policies.
- Financial constraints, with $32 billion needed for de carbonization by 2050.

Opportunities:

- EU Green Deal and funding mechanisms like the Just Transition Fund and ETS.
- Green Agenda for the Western Balkans promoting renewable energy and de carbonization.
- Private sector investment potential to drive the green transition.
- Expansion of renewable energy sources for sustainable growth.
- Regional cooperation and development of climate-resilient tourism.

In conclusion, the Western Balkans faces significant climate-related challenges, including extreme weather, resource scarcity, and reliance on coal-based systems. However, opportunities such as alignment with EU policies, renewable energy expansion, and private sector investments provide a pathway for sustainable growth and climate resilience. Enhanced regional cooperation and robust financial mechanisms are keys to overcoming barriers and achieving a successful green transition.

Nomenclature

EEA – European Environment Agency
IPA – Instrument for Pre-accession Assistance
IRENA – International Renewable Energy Agency
NECP – National Energy and Climate Plan
R&D – Research and development
ETS – Emissions Trading System
UNEP – United Nations Environment Program
UNDP – United Nations Development Program

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