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ECO-INNOVATION AND COMPETITIVE SUSTAINABILITY IN THE EU-27: A CROSS-SECTIONAL BENCHMARK (2024)

Lejla Terzić

University of East Sarajevo, Bosnia and Herzegovina

ORCID 0000-0002-5048-036X

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ECO-INNOVATION AND COMPETITIVE SUSTAINABILITY IN THE EU-27: A CROSS-SECTIONAL BENCHMARK (2024)

Lejla Terzić

University of East Sarajevo, Bosnia and Herzegovina

ORCID 0000-0002-5048-036X

Abstract: The purpose of the study is to benchmark the association between the Eco-Innovation Index and the Competitive Sustainability Index (CSI) across the EU-27 in 2024. The study used official 2024 scores and Spearman rank correlations on a cross-sectional dataset. This 2024 study of the EU-27 found a strong positive correlation between the Eco-Innovation Index and the overall Competitive Sustainability Index (ρ=0.866), indicating that higher eco-innovation performance is associated with greater competitive sustainability, though the strength of the association varied across CSI pillars. The study is limited to descriptive associations but provides crucial data for EU benchmarking and generating hypotheses for multi-year analyses on the relationship between eco-innovation and competitive sustainability.

Keywords: eco-innovation; competitive sustainability; EU-27; cross-sectional benchmark

JEL codes: C80; O30; O49; O57; Q56

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Introduction

The eco-innovation and competitive sustainability accomplishments of increasingly globalising nations have been highlighted as key subjects in the present economic research. Research on competitive sustainability in the context of eco-innovation, GDP growth, and economic prosperity has remained a global priority. However, because of the variety of their features and opinions, the most recent scientific publications have not provided a comprehensive examination of these subjects. A steady GDP growth rate has long been associated with a country's prosperity. A more comprehensive approach

for evaluation might be justified, though, given the variety of problems that countries have to contend with, which range from loss of biodiversity and societal division to improved green innovation and competitive sustainability performance. A more comprehensive approach for analysis might be justified, though, given the variety of problems that countries are currently facing, which range from environmental deterioration to societal division, in improving green innovation and competitive sustainability performance. Competitive sustainability performance tracks sustainable development in addition to GDP per capita and argues for a shift in thinking that considers the governing, ecological, and sociological functions of various economies. The unique characteristics of prosperity via eco-innovation and competitive sustainability performance are highlighted in this study. Measures of eco-innovation, GDP per capita, and the economic, socioeconomic, and governance performance of the EU member states were examined as certain associations between eco-innovation and competitive sustainability indicators.

Eco-innovation and different sustainability performances are acknowledged as one of the most significant aspects affecting a nation's economy and its possibilities for future prosperity. The importance of eco-innovation and competitive sustainability in promoting growth and prosperity, however, has not been examined in recent studies. A major investigation issue is addressed in significant detail in this paper: Does eco-innovation have a major role in reaching competitive sustainability in the European Union economies? The relationships between important variables have been investigated using Spearman's examination of hypotheses. Additionally, the study used the rho-p test for hypotheses, which is commonly performed on ordinal parameters, to evaluate the significance of Spearman's relationships. Spearman's rank-order associations were used to analyse the correlations between the Eco-Innovation Index, Competitive Sustainability Performance Index, GDP per capita PPP, Economic Prosperity Index, Societal Fairness Index, Governance Stability Index, and Green Environmental Index.

Governments and important stakeholders may find value in the study's conclusions. The differences in the ranking and priority of critical criteria have prepared the way for future evaluations of national economies' prosperity and the creation of plans to boost the efficiency of eco-innovation and competitive sustainability performance in the EU countries. There are five sections in this article. The first part of the article covers the introduction. The second section provides clarification on the theoretical underpinnings of current scientific studies on eco-innovation and competitive sustainability performance and their impact on national prosperity and GDP growth. The third part of the paper describes data and research methodology. The paper's fourth part assures comprehension of the research results. The fifth part of the paper presents conclusions.

Theoretical summary of actual literature

Various theoretical views exist about eco-innovation and sustainability. There is only one widely accepted name for green innovation in the scientific literature, and the existing theories have varying research scopes (Carrillo-Hermosilla et al., 2009; Ekins, 2010; Díaz-García et al., 2015; Hojnik et al., 2016; Türkeli and Kemp, 2018; de Jesus et al*.,* 2019; Terzić, 2022; Terzić, 2024b). Although its results are usually inconclusive and it often relies on scientific methods (sustainable solutions), eco-innovation has been defined by a considerably greater level of variability than traditional innovation. The degree and scope of the different eco-innovation interpretations identified in theoretical research and commercial use vary. In general, scientists are drawn to innovations that enhance sustainability. Eco-innovation is innovation with a dominant ecological effect. The ability of an economy, its businesses, and industrial ecosystems to outperform their global counterparts in a competitive shift to a sustainable economic model through investments in deliberate innovation is known as *competitive sustainability* (CISL, 2024). CSI include four pillars: economy, society, governance, and environment.

Scientists started studying green innovation in the late 1970s (Hazarika and Zang, 2019; Urbaniec, 2015). A more thorough definition of eco-innovation was created in the latter part of the 1990s, which included "every aspect of the indicators, including suitable participants (business entities, legislatures, institutions, associations, religious groups, and households) that, as they establish creative ideas, operations, products, or processes, employ or demonstrate each other, and ultimately contribute to achieving sustainability goals or minimizing global environmental issues demands" (Faucheux et al., 1998*;* Porter, 2008; Rennings, 2000; Costantini and Mazzanti, 2012; Terzić, 2024a). Along with advancements in products, processes, and advertising strategies, eco-innovation also includes enhancements to institutional and social foundations. Therefore, green innovation does not necessarily have to be a global first or the result of a deliberate business initiative or strategy.

Therefore, it can be argued that any idea that surpasses significant potential with regard to positive environmental impacts is a green innovation (e.g., green regulations, advances in technology, company advancements, ecological sustainability, technological advances, products and services, and novel ideas) (Arundel and Kemp, 2009; Ghisetti et al., 2015; Nordhaus, 2021). The Eco-Innovation Scoreboard (Eco-IS) has been treated similarly. According to the EIO, green innovation is any innovation that leads to noticeable progress toward the ultimate aim of a sustainable economy, whether it is

intended to reduce negative ecological consequences or obtain more effective and ecologically conscious exploitation of resources.

The Eco-Innovation scores ranking could be used to identify the advantages and disadvantages of eco-innovation in each EU country. By promoting an extensive comprehension of economic, ecological, and social accomplishments, the Eco-Innovation Scoreboard improves other techniques of measuring national innovation, such as the International Innovation Index (European Commission, 2024). Promoting a comprehensive viewpoint on sustainability in the economy, society, and environment is the aim of the Eco-Innovation Index. Many scholars have worked to develop a research methodology to measure green innovation (Rozkrut, 2014; Horbach, 2016; Terzić, 2024a; 2024b). This contributes to the endeavour to find new methods for economic analysis. Possibilities for green innovation are particularly important for creating and implementing instruments to support sustainable development (Colombo et al., 2019; Donis et al., 2021; Terzić, 2023). Eco-innovation is crucial to achieving the European Green Deal's objective of transitioning to a zero-carbon, circular economy.

This raises an essential issue of how to tackle this interrelated group of problems in an efficient manner that incorporates them from the beginning. The Competitive Sustainability Index aims to accomplish this in a way that sets it apart from the competitiveness evaluations that have been previously mentioned. The CSI basis stays completely in line with contemporary policy and highly skilled perception on economic expansion, inventiveness, and sustainable development to provide an updated definition and comprehension of competitiveness, its motivating factors and enablers, as well as its results and impacts, even though it was created as a means of evaluating the European Commission's personalised competitive sustainability plans.

By incorporating economic considerations into sustainability, the CSI offers a more comprehensive, cohesive, and sophisticated view than the usual competitiveness ratings utilised by the EU or other organisations, as opposed to conventional methods that attempt to incorporate certain thinking about sustainability through the field of economics. This is important because it combines the numerous social, economic, governance, and environmental components that nations, their supply chains, and businesses must consider when trying to attract foreign investments.

Although being frequently utilised and cited by the EU and several other organisations, both public and private, the term "competitiveness" is missing a single, accepted definition and is still ambiguous. Despite its thorough examination, the CSI assessment is the most pertinent recent case. New perspectives on competitiveness have been influenced by the growth of sustainability theory. The scope is expanded as public policy

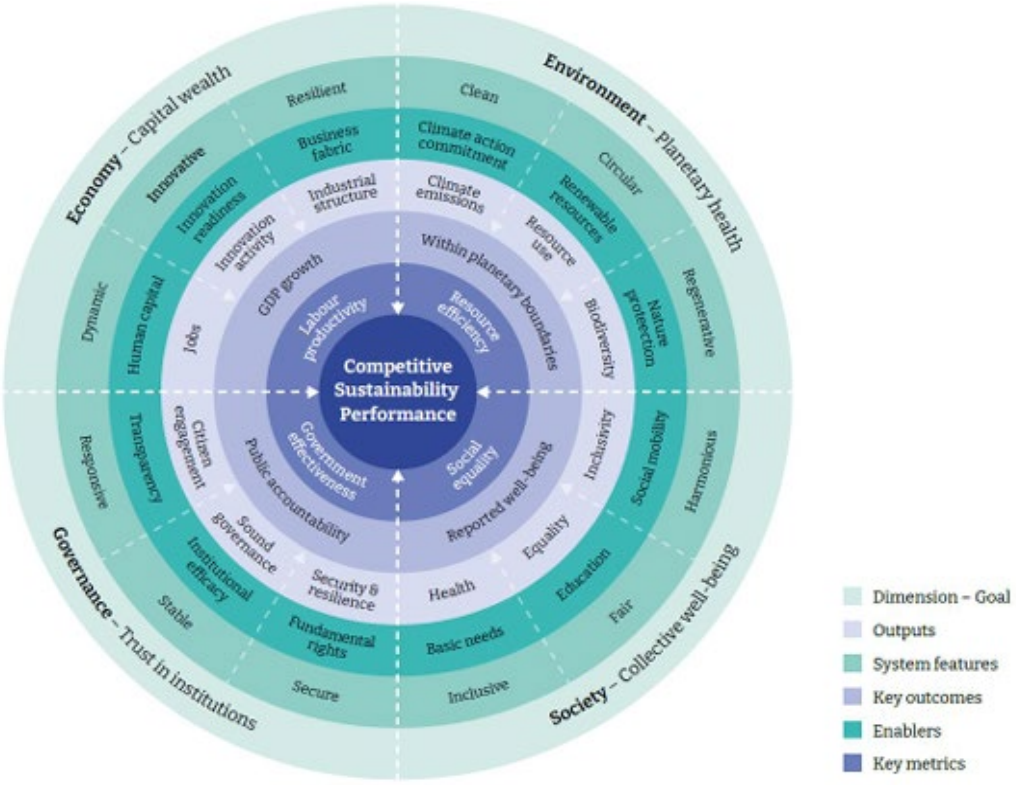
aims to address global environmental restrictions, including but not limited to carbon neutrality and social challenges, such as "well-being" or "prosperity," in addition to GDP and growth in productivity. However, the competitiveness evaluations still only take these into account as incidental factors.

Several factors are taken as variables in the above definition. Due to the monetary, social, and political benefits that an increase in competitiveness can provide, it is commonly seen as a measure of economic well-being. Nevertheless, as the CSI demonstrates, indicators that emphasise GDP and economic growth are also commonly utilised for assessing competitiveness. Still, these metrics fail to adequately address the factors that allow us to improve our complete life standard or prevent adverse environmental effects. The CSI was created with this new understanding of competition in mind. The CSI measures how well nations, their economies, and their business do for innovative projects that support the shift to sustainable development, particularly the Paris Agreement's goal of becoming climate neutral. Public officials looking to improve the planning and execution of policies to facilitate this shift, as well as other process participants from the public or private sectors or nonprofit organisations, are expected to find this index helpful.

Consequently, its main concern is on how economies, their demand chains, and innovation ecosystems function during the transition, where innovation – both digital and technology-enabled as well as socially driven – plays a crucial role in ensuring success by fusing market-oriented competition with government support and guidance (Peretto, 2015; Rogge & Reichardt, 2016). Given the broader context of this economic transformation, the Index incorporates the examination and assessment of this into an overall structure that monitors and demonstrates accomplishment on the other aspects of sustainability, including social and environmental objectives and the system of governance that supervises them. The Index outlines the framework requirements for enhancers of accomplishment as well as outputs or impacts that are revealing of effectiveness in every one of these four areas (economy, society, governance, and environment) (Figure 1).

An overview that incorporates possibilities for future advancement as well as the evaluation of existing performance may be constructed thanks to the mixture of gauges of framework circumstances or drivers on one aspect and measures of output and effects on the opposite side. This method examines the changing dynamics of the transition until it may reach a general harmony or balance and produce a model of really sustainable progress. It aims to guide activities that result in unfavourable alternatives among the four sustainability aspects.

Despite the fact that GDP disparities remain a difficult undertaking for developed as well as emerging nations, legislators, researchers, and governments continue to place a high importance on comprehending the components of green innovation and competitive sustainability performance. Do green innovation and competitive sustainability have a major role in fostering prosperity and GDP growth in EU economies? This is a crucial problem that is investigated in this work. A number of researchers have examined the relationship between GDP growth and eco-innovation (Albu, 2017; Fernandes et al., 2021; Terzić, 2022; 2023), demonstrating that the more innovative an economy is, the more likely it is to experience higher rates of GDP growth. Economic prosperity, social fairness, governance stability, and a green environment are the four facets of sustainability that are measured by the Competitive Sustainability Performance Index (CSI, 2024).



Source: CISL, 2024, p. 5.

Figure 1. Compass for Competitive Sustainability Performance

CSI, by using a "beyond Draghi" viewpoint, then enables an evaluation of the country's progress toward long-term, inclusive, and fair economic prosperity. The phrase "beyond Draghi" describes debates and projects aimed at expanding on the suggestions made in Mario Draghi's assessment of European competitiveness. In addition to tackling the need for increased EU-level cooperation and economic assistance, this entails going beyond the original report to create specific plans, especially in areas including industrial policy, regulation of competition, and technological innovation. A number of policy briefs and conferences have been produced to examine how to turn Draghi's vision into concrete measures for improving the EU's economic position. The four aspects (CSI, 2024) are:

- dynamic, innovative and resilient economy,
- inclusive, fair and harmonised society,
- responsive, stable and secure governance, and
- clean, circular and regenerative environment.

By emphasising innovation, decarbonization, and security, the European Commission's Competitive Sustainability Compass aims to strengthen Europe's resilience and competitiveness while upholding the ambitious objectives of the European Green Deal. The goals of its policy framework are to enhance coordination for quicker, more efficient decision-making, introduce new policies for an additional level up, and update current frameworks. Diversifying supply chains, improving public procurement with a European preference, reducing commercial red tape, expanding the single European marketplace, and facilitating better financing are important steps to support sustainable growth and address global issues.

Methodology and data

The University of Cambridge Institute for Sustainability Leadership (CISL) developed the CSI, which provides a data-driven evaluation of overall sustainability. The Competitive Sustainability Index's initial publication expands upon four dimensions: Green/Environment, Governance/Stability, Economy/Productivity, and Society/Fairness. Eighty-four variables make up a conceptual structure, which is then subsequently collected into thirty-one factors, ten sub-dimensions, four levels, and a comprehensive index.

The Joint Research Centre (JRC) of the European Commission is conducting revisions to maximise the Competitive Sustainability Index framework's consistency and objectivity. Policymakers and academics worldwide will be in a position to derive more pertinent and

significant recommendations to enhance or completely reveal the competitive sustainability strengths of EU member states. The European Environment Agency publishes reports regarding green innovation indicators.

Spearman's analysis of hypotheses has been used to examine the connections between significant variables. The study also assessed the significance of Spearman's relationships using the rho-p test for hypotheses, which is frequently conducted on ordinal variables. The relationships between the Eco-Innovation Index, Competitive Sustainability Performance Index, GDP per capita PPP, Economic Prosperity Index, Societal Fairness Index, Governance Stability Index, and Green Environmental Index were examined using Spearman's rank-order correlations. Data sources that were implemented to aggregate the indicators include the European Environment Agency Report, the University of Cambridge Institute for Sustainability Leadership Report, the European Commission Report, and the Eurostat countries database. This study benchmarks associations between eco-innovation and competitive sustainability across the EU-27 in 2024. The Spearman rank correlations on a cross-sectional dataset and official 2024 scores were employed in the study. The study is restricted to descriptive associations but offers vital information for EU benchmarking and developing hypotheses for multi-year analyses on the relationship between eco-innovation and competitive sustainability. Given the one-year snapshot, results should not be interpreted as trends or causal effects. To be supplemented with a content analysis of the results obtained when applying statistical methods.

Research results

The research study was carried out in the subsequent European Union countries: Finland (FI), Denmark (DK), Sweden (SE), Austria (AT), Luxembourg (LU), Italy (IT), France (FR), Germany (DE), Netherlands (NL), Spain (ES), Czechia (CZ), Slovenia (SI), Ireland (IE), Estonia (EE), Latvia (LV), Lithuania (LT), Portugal (PT), Belgium (BE), Malta (MT), Slovakia (SK), Cyprus (CY), Croatia (HR), Greece (EL), Romania (RO), Poland (PL), Hungary (HU), and Bulgaria (BG).

The collected data for each EU economy covers the period 2023–2024. Table 1 displays scores and ranks in the European Union economies based on the Eco-Innovation Index (EII), Competitive Sustainability Index (CSI), Index of GDP per capita PPP standards, Economy/Prosperity Index, Society/Fairness Index, Governance/Stability Index, and Green/Environment Index.

Table 1. Scores and ranks of EU countries by indicators of the eco-innovation index, competitive sustainability index, and index of GDP per capita PPP standards in 2024

Indicator	**Eco-Innovation Index (EII)**		**Competitive Sustainability Index (CSI)**		**Index of GDP per capita PPP standards**	
Economy	Score	Rank	Score	Rank	Score	Rank
Finland (FI)	180,8	1	72	2	103	10
Denmark (DK)	177,5	2	69	3	128	4
Austria (AT)	177,1	3	62	5	115	6
Luxembourg (LU)	175,1	4	61	6	241	1
Sweden (SE)	165,2	5	73	1	114	8
Italy (IT)	150,1	6	47	18	98	12
France (FR)	144,0	7	58	10	99	11
Germany (DE)	140,7	8	61	7	115	7
Netherlands (NL)	133,1	9	67	4	135	3
Spain (ES)	127,2	10	48	16	92	14
Czechia (CZ)	125,6	11	47	17	91	15
Slovenia (SI)	121,5	12	57	12	91	16
Ireland (IE)	121,2	13	60	8	211	2
Estonia (EE)	116,5	14	57	11	79	19
Latvia (LV)	114,7	15	49	15	71	25
Lithuania (LT)	114,7	16	51	14	87	17
Portugal (PT)	113,2	17	51	13	82	18
Belgium (BE)	109,2	18	59	9	117	5
Malta (MT)	99,2	19	44	20	109	9
Slovakia (SK)	98,9	20	45	19	75	23
Cyprus (CY)	97,6	21	39	23	95	13
Croatia (HR)	96,6	22	43	21	77	22
Greece (EL)	91,0	23	39	24	70	26
Romania (RO)	80,2	24	26	27	79	21
Poland (PL)	69,7	25	40	22	79	20
Hungary (HU)	64,4	26	37	25	77	24
Bulgaria (BG)	58,8	27	31	26	66	27

Source: EEA, 2024; CISL,2024; Eurostat countries database, 2024; author's calculations.

Based on eco-innovation rankings and scores, Finland is the highest-ranked EU country. Significant differences between EU economies were found in the Eco-Innovation Index ratings. Sweden and Finland are the top two nations in the European Union with the highest rankings and scores on the competitive sustainability index, as indicated in Table 1. Based on GDP per capita rankings and values, Luxembourg is the top EU nation. Bulgaria is the EU member state with the lowest GDP per capita and green innovation index, while Romania has the lowest ranking in terms of competitive sustainability performance.

Economic Prosperity Index, Societal Fairness Index, Governance Stability Index, and Green Environmental Index scores and rankings for EU economies are shown in Table 2. According to the Economy/Prosperity Index, the leading economies are Finland and the Netherlands. Romania is the lowest-ranked country according to the Economy/Prosperity Index and Society/Fairness. The leading economy in terms of society/fairness and green/environment is Sweden. Denmark is the highest-ranked economy on the governance stability index, while Bulgaria is the lowest-ranked economy. Cyprus is the lowest-positioned country according to the green environment index.

Table 2. Scores and ranks in the EU-27 according to the indices of economy/prosperity, society/fairness, governance/stability, and green/environment in 2024

Index	**Economy/Prosperity Index**		**Society/Fairness Index**		**Governance/Stability Index**		**Green/Environment Index**	
EU -27	Score	Rank	Score	Rank	Score	Rank	Score	Rank
FI	71	1	73	5	80	4	60	6
DK	50	11	75	3	87	1	65	2
AT	61	3	69	8	64	10	56	13
LU	51	10	72	6	75	5	46	20
SE	57	4	81	1	82	2	71	1
IT	38	17	51	18	42	18	57	12
FR	49	12	65	10	59	11	58	9
DE	55	5	66	9	71	7	52	16
NL	65	2	73	4	81	3	47	19
ES	32	23	57	13	49	15	54	14
CZ	42	14	54	14	49	14	44	23
SI	54	6	69	7	47	17	57	11
IE	53	7	65	11	65	8	59	8
EE	52	8	54	16	71	6	50	17
LV	37	18	49	21	50	13	61	5
LT	47	13	47	22	53	12	57	10
PT	42	15	54	15	47	16	62	3
BE	51	9	77	2	64	9	44	24
MT	33	21	49	20	41	20	54	15
SK	33	19	58	12	41	19	45	21
CY	41	16	47	24	36	21	33	27
HR	32	22	47	23	31	23	62	4
EL	30	26	40	25	25	24	59	7
RO	19	27	14	27	24	25	48	18
PL	33	20	51	17	35	22	42	25
HU	31	24	50	19	23	26	45	22
BG	31	25	32	26	22	27	39	26

Source: The University of Cambridge Institute for Sustainability Leadership (CISL) (2024) and author's calculations.

Table 3 presents relationships between the Eco-Innovation Index, Competitive Sustainability Index, Index of GDP per capita PPP standards, Economy/Prosperity Index, Society/Fairness Index, Governance/Stability, and Green/Environment in the EU economies in 2024. The estimation process was carried out using SPSS 25.

Table 3. Correlations between the Eco-Innovation Index, Competitive Sustainability Index, Index of GDP per capita PPP standards, and the indices of economy/prosperity, society/fairness, governance/stability, and green/environment in the EU-27 in 2024

	EII	**CSI**	**EPI**	**SFI**	**GSI**	**GEI**	**GDP pc**
EII	1.000	.866**	.758**	.748**	.838**	.435*	.730**
CSI	.866**	1.000	.913**	.888**	.961**	.432*	.775**
EPI	.758**	.913**	1.000	.809**	.860**	.227	.727**
SFI	.748**	.888**	.809**	1.000	.822**	.199	.752**
GSI	.838**	.961**	.860**	.822**	1.000	.357	.763**
GEI	.435*	.432*	.227	.199	.357	1.000	.101
GDP pc	.730**	.775**	.727**	.752**	.763**	.101	1.000

Note: *. Correlation is significant at the 0.05 level (two-tailed); **. Correlation is significant at the 0.01 level (two-tailed).

Source: Author's calculations.

The research done in EU economies yields a lot of recommendations. The Competitive Sustainability Index and the Eco-Innovation Index have a strong and positive correlation (0.866, where $p<0.001$). The Governance Stability Index and Competitive Sustainability Index have been found to have a very strong positive and significant relationship (0.961, where $p<0.001$). With a correlation coefficient of 0.913, $p<0.001$, a very strong, positive, and significant relationship between the Economy Prosperity Index (EPI) and the Competitive Sustainability Index (CSI) has been found. A correlation coefficient of 0.888 indicates a positive relationship between the CSI and the Society Fairness Index (SFI). No statistically significant association were observed for Green Environmental Index (GEI) and the following indices, respectively: Society/ Fairness Index (0.199), Economy/ Prosperity Index (0.227), GDP per capita (0.101), Governance/Stability Index (0.357). Non-significant associations were observed between GEI and EII (0.435) and CSI (0.432), respectively.

A correlation coefficient of $rs=0.838$, where $p<0.001$, indicates a very strong relationship between the Governance/Stability Index (GSI) and the Eco-Innovation Index (EII). The correlation between the Eco-Innovation Index and the Society Fairness Index is $rs=0.748$, $p<0.001$. The correlation coefficient between the Green Innovation Index and GDP per capita is $rs=0.730$, $p<0.001$, indicating a positive and significant relationship.

A correlation coefficient of rs=0.860, p<0.001, indicates a very strong positive and significant relationship between the GSI and EPI. GSI and SFI have a very strong positive and significant correlation, as indicated by the correlation coefficient of rs=0.822 (p<0.001). The GDP per capita and SFI have a significant positive correlation (rs=0.752, p<0.001), and there is also positive and significant interdependence between the GDP per capita and EPI (rs=0.727, p<0.001). The data confirms a very strong positive and significant association between the GSI and the GDP per capita index (rs=0.763, p<0.001).

Restrictions

Although the study is restricted to descriptive associations and relies on official 2024 scores and Spearman rank correlations on a cross-sectional dataset, it offers vital information for EU benchmarking and the development of hypotheses for multi-year analyses on the connection between eco-innovation and competitive sustainability. While correlations can be found in a cross-sectional study, causal linkages cannot. They are unable to ascertain a series of occurrences and only record measurements once. Essentially, they measure potential causes and effects at the same time, making it difficult to discern between them. As a result, they are unable to determine how variables change or interact over time.

Conclusion

This study benchmarks associations between eco-innovation and competitive sustainability across the EU-27 in 2024. Results indicate positive cross-sectional associations (ρ=0.866, p=0.961, p=0.913, p=0.888, p=0.838, p=0.748, p=0.730, p=0.860, p=0.822, p=0.752, p=0.727, p=0.763), while some pillar-level links remain weak or non-significant. The following observations can be drawn from the significance of eco-innovation and competitive sustainability performance in boosting the future growth of EU economies. Economic prosperity, societal fairness, and governance stability performance are the most important drivers of competitive sustainability performance. The scores obtained using the appropriate metrics in the fields of eco-innovation, competitive sustainability, GDP per capita, economic prosperity, societal fairness, and governance stability can be crucial in comparing ratings between nations and provide helpful guidance in creating economic policies aimed at promoting future economic well-being. To track competitive sustainability, as well as economic growth, European nations can use the EII, CSI, EPI, SFI, GSI, and GDP per capita. Through the green transition, Europe can refocus its economic growth in a way that promotes equity and sustainability. Gross domestic product growth has been consistently associated with the idea of competitive sustainability.

The theoretical basis must be modified to include social and governance elements in addition to the competitive sustainability that regulates EU economies. Analysed indicators of eco-innovation and competitive sustainability that raise well-being across Europe can be useful to policymakers. Competitive sustainability performance and eco-innovation can improve the efficacy and adaptability of social and economic structures. A key component of achieving competitive sustainability performance is eco-innovation directed to economic prosperity, societal fairness, and governance stability. Although the study is restricted to descriptive associations and relies on official 2024 scores and Spearman rank correlations on a cross-sectional collection of data, it offers vital information for EU benchmarking and the development of concepts for multi-year assessments on the link between eco-innovation and competitive sustainability. Future work should extend the analysis to a multi-year panel to assess stability over time.

Conflicts of Interest

The author has no conflicts of interest to declare.

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Lejla Terzić, PhD, is an Associate Professor, Faculty of Economics, and Dean of Academic Affairs at the University of East Sarajevo in Brčko, Bosnia and Herzegovina. ORCID 0000-0002-5048-036X, lejla.terzic.efb@gmail.com.

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Appendix

Indicators scores

Indicator	**Eco-Innovation Index**	**Competitive Sustainability Index**	**Index of GDP per capita PPP standards**	**Economy/ Prosperity Index**	**Society/Fairness Index**	**Governance/ Stability Index**	**Green/ Environment Index**
Economy	Score	Score	Score	Score	Score	Score	Score
Finland (FI)	180,8	72	103	71	73	80	60
Denmark (DK)	177,5	69	128	50	75	87	65
Austria (AT)	177,1	62	115	61	69	64	56
Luxembourg (LU)	175,1	61	241	51	72	75	46
Sweden (SE)	165,2	73	114	57	81	82	71
Italy (IT)	150,1	47	98	38	51	42	57
France (FR)	144,0	58	99	49	65	59	58
Germany (DE)	140,7	61	115	55	66	71	52
Netherlands (NL)	133,1	67	135	65	73	81	47
Spain (ES)	127,2	48	92	32	57	49	54
Czechia (CZ)	125,6	47	91	42	54	49	44
Slovenia (SI)	121,5	57	91	54	69	47	57
Ireland (IE)	121,2	60	211	53	65	65	59
Estonia (EE)	116,5	57	79	52	54	71	50
Latvia (LV)	114,7	49	71	37	49	50	61
Lithuania (LT)	114,7	51	87	47	47	53	57
Portugal (PT)	113,2	51	82	42	54	47	62
Belgium (BE)	109,2	59	117	51	77	64	44
Malta (MT)	99,2	44	109	33	49	41	54
Slovakia (SK)	98,9	45	75	33	58	41	45
Cyprus (CY)	97,6	39	95	41	47	36	33
Croatia (HR)	96,6	43	77	32	47	31	62
Greece (EL)	91,0	39	70	30	40	25	59
Romania (RO)	80,2	26	79	19	14	24	48
Poland (PL)	69,7	40	79	33	51	35	42
Hungary (HU)	64,4	37	77	31	50	23	45
Bulgaria (BG)	58,8	31	66	31	32	22	39
Eco-Innovation Index			https://www.eea.europa.eu/en/analysis/indicators/eco-innovation-index-8th-eap (Accessed 16 March 2025)				
Competitive Sustainability Index, Economy/Prosperity Index, Society/ Fairness Index, Governance/Stability Index, Green/Environment Index			https://www.cisl.cam.ac.uk/files/2024_competitive_sustainability_index_summary.pdf (Accessed 16 March 2025)				
Index of GDP per capita PPP standards			https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Purchasing_power_parities_and_GDP_per_capita_-_preliminary_estimate (Accessed 17 March 2025)				