

# The Impact Of Green Economy On Sustainable Development: Evidence From Palestine

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## Abstract

**Purpose:** Globally, the green economy (GE) is now acknowledged as a major force behind sustainable development (SD). With a focus on GDP per capita, unemployment rate, and poverty level from 2005 to 2024, this paper investigates GE's role in SD in Palestine.

**Design/methodology/approach:** The analysis integrates the four aspects of the Global Green Economy Index (GGEI) to evaluate the multidimensional impact of GE using Generalized Least Squares (GLS) regression on cross-sectional data (panel data).

**Findings:** Empirical results indicate that most GE dimensions are positively associated with poverty reduction, while Green Economic Opportunities (GEO) exhibit a negative and statistically significant effect on GDP per capita, unemployment, and poverty. Efficient and Sustainable Resource Use (ESRU) shows no significant relationship with GDP per capita or unemployment.

**Policy implications:** The study highlights the importance of sustained public and private sector engagement in GE initiatives to promote SD, enhance employment, and reduce poverty.

**Originality/value:** This research is among the first studies in underdeveloped countries to examine the GE–SD nexus using three SD indicators within a GLS framework, offering evidence-based insights for policymakers.

**Keywords:** Green economy, friendly environment, sustainable development.

## Introduction

There is widespread agreement today that sustainable development and environmental preservation are intrinsically linked. Across the globe, countries recognize that long-term prosperity must be pursued through a balance of economic growth and ecological responsibility, even amid persistent environmental challenges. Rooted in the principles of the Rio Declaration and Agenda 21, the 1992 United Nations Conference on Environment and Development urged nations to craft national strategies for achieving sustainability (Allen & Clouth, 2012). Yet, despite continuous domestic and global initiatives, many states still struggle to maintain harmony between economic advancement and environmental integrity. These difficulties are compounded by recurring crises in energy, food, and finance, alongside climate change, resource depletion, and biodiversity loss. Consequently, international policymakers have sought innovative strategies to integrate economic stability with environmental sustainability. The concept of the Green Economy (GE) emerged as a holistic

response to these challenges. Since its inception in 2008, GE has attracted growing global attention—first as a recovery strategy after the financial crisis, and later, at the 2012 Rio+20 Summit, as a central pillar of sustainable development policy. The United Nations Environment Programme (UNEP) defines the green economy as one that harmonizes three essential elements: human capital, environmental management, and social equity (Caprotti & Bailey, 2014).

## **2. Literature Review and Hypothesis Development**

### **2.1 Introduction**

The green economy refers to an economic model where investment, production, and consumption are purposefully directed toward achieving low-carbon, resource-efficient, and socially inclusive growth (GGGI, 2024; SDSN, 2024). Within research and policy discussions, this concept is viewed in two complementary dimensions: first, as a transformation of sectors such as renewable energy, energy efficiency, sustainable manufacturing, and circular production; and second, as a comprehensive policy approach that employs fiscal, financial, and labor instruments to link growth with environmental protection and social justice (IRENA & ILO, 2024; UN DESA, 2024). Given the multidimensionality of sustainable development, empirical analysis of GE requires well-defined indicators. This study, therefore, concentrates on three socio-economic outcomes: employment, GDP per capita, and poverty reduction. Previous literature identifies multiple channels through which the green economy influences these outcomes. Employment effects arise from direct job creation in renewable and efficiency sectors, indirect supply chain stimulation, and induced increases in consumption (IRENA & ILO, 2024). Green investment also drives technological innovation, productivity, and energy savings, resulting in higher income per capita (Zeng, Li, & Magazzino, 2024; Zheng, 2024). Additionally, GE initiatives reduce poverty through employment and income generation, price stability, and improved resilience against climate and economic shocks (SDSN, 2024; UN DESA, 2024). The extent of these impacts depends largely on institutional capacity, access to finance, and the quality of human capital (GGGI, 2024; Nguyen et al., 2024).

### **2.2 Sustainable Development**

#### **2.2.1 Employment Level**

Global evidence demonstrates the significant job-creation potential of green sectors. Reports by IRENA and the ILO show that renewable energy industries now employ tens of millions worldwide, driven primarily by solar, wind, and decentralized systems (IRENA & ILO, 2024). Employment opportunities span manufacturing, installation, and operations, with countries possessing strong domestic industries and local-content policies benefiting the most. Studies confirm that renewable expansion generates net employment gains, particularly when accompanied by reskilling and local supply chain development (GGGI, 2024; Zeng et al., 2024). However, job quality, skill levels, and geographic distribution vary across nations, and employment losses in fossil-fuel sectors may offset gains without adequate transition policies (IRENA & ILO, 2024; SDSN, 2024). Meta-analyses consistently highlight three key findings: (1) large-scale, locally integrated green investments generate significant job creation; (2) net employment depends on the balance between created and displaced jobs; and (3) inclusive labor policies—such as training, social protection, and local procurement enhance overall employment outcomes (Khan, 2025; IRENA & ILO, 2024).

#### **2.2.2 GDP per Capita**

While the short-term impact of green economic initiatives on GDP per capita can be ambiguous, long-term trends show a generally positive relationship. Theoretical frameworks in ecological modernization suggest that innovation and green industries can promote growth without environmental compromise (Zheng, 2024). Empirical cross-country studies link renewable capacity expansion and green investment to increases in per capita income (Esily et al., 2023; Zeng et al., 2024; Nguyen et al., 2024). Technological cost reductions have lowered energy expenses,

stimulating both consumption and production (IRENA & ILO, 2024). Nonetheless, low-income economies often face challenges such as limited finance, weak governance, and technological gaps that slow progress (GGGI, 2024). Moreover, structural adjustments—like stranded fossil assets—can temporarily reduce productivity. Dynamic panel analyses reveal that green policies generally enhance GDP per capita, but their impact is moderated by financial and institutional quality (Nguyen et al., 2024; Zeng et al., 2024).

### **2.2.3 Poverty Level**

Research offers diverse conclusions on how GE transitions affect poverty reduction, depending on policy inclusiveness and growth distribution. Conceptually, GE alleviates poverty through three channels: job creation, reduced household costs via affordable clean energy, and enhanced resilience through sustainable infrastructure (UN DESA, 2024; SDSN, 2024). Empirical findings show that rural renewable initiatives and energy-efficiency upgrades improve income and energy access (Nguyen et al., 2024; IRENA & ILO, 2024). Broader analyses confirm that green finance expansion correlates with poverty reduction when coupled with social protection policies (World Bank, 2012; Nguyen et al., 2024). However, without equitable distribution, green growth can widen inequality (SDSN, 2024; GGGI, 2024). Thus, poverty alleviation depends on the inclusivity of investments and social policy design.

## **2.3 Cross-Cutting Determinants**

Three overarching factors determine the effectiveness of GE initiatives on employment, growth, and poverty:

1. **Green Finance and Investment Mobilization** – The ability to attract both public and private funds through mechanisms like green bonds and climate finance is critical for large-scale development. Evidence links green finance to growth, though its effectiveness relies on complementary energy and production policies (Nguyen et al., 2024; Marín-Rodríguez, 2024).
2. **Institutional Quality and Governance** – Transparent regulatory systems, efficient permitting, and fiscal stability encourage investor confidence and resource efficiency. Countries with strong governance typically record better growth and social outcomes (GGGI, 2024; SDSN, 2024).
3. **Human Capital and Reskilling** – Green employment benefits depend on skilled labor and effective training. Economies investing in vocational education and apprenticeships achieve higher value addition and sustainable job creation (IRENA & ILO, 2024).

## **2.4 Green Economy**

The green economy serves as a core paradigm in sustainability debates, promoting development that simultaneously supports economic growth, environmental protection, and social well-being. It is often evaluated through four interconnected dimensions: Efficient and Sustainable Resource Use (ESRU), Natural Capital Protection (NCP), Green Economic Opportunities (GEO), and Social Inclusion (SI) (GGGI, 2024).

- **ESRU:** Focuses on minimizing waste and improving efficiency in resource use. Renewable energy and circular production systems help decouple growth from degradation, while investments in clean technology enhance competitiveness (Zheng, 2024; Zeng, Li, & Magazzino, 2024).
- **NCP:** Highlights ecosystem and biodiversity preservation. Depletion of natural capital undermines economic stability, especially in agriculture-based economies. Tools like carbon pricing integrate environmental costs into planning (UN DESA, 2024; SDSN, 2024).
- **GEO:** Reflects job and industry creation potential in renewable energy, green agriculture, and eco-tourism. Innovation, green finance, and digital technologies stimulate structural transformation (IRENA & ILO, 2024; Nguyen et al., 2024).

- SI: Emphasizes equity in green transitions. Policies such as gender-sensitive programs, targeted subsidies, and community projects ensure fair participation and social protection (UN DESA, 2024; Sachs et al., 2024).

Given that GE is vital to advancing sustainable development, this study proposes the following hypotheses:

- H1: Enhancing the green economy promotes economic development.
- H2: Enhancing the green economy reduces poverty.
- H3: Enhancing the green economy increases employment levels.

## 2.5 Research Gaps and Study Motivation

Despite extensive studies, several gaps persist:

1. A need for robust causal estimations of GE's effects on employment, income, and poverty using standardized measures.
2. Limited understanding of how employment and income mediate poverty reduction.
3. Insufficient exploration of heterogeneity across income and institutional contexts. This paper seeks to address these gaps by examining how GE affects employment, GDP per capita, and poverty levels in developing economies such as Palestine, including mediation and contextual analyses.

## 3. Methodology

### 3.1 Model specification

This study employs the Generalized Least Squares (GLS) estimation technique on cross-sectional data from Palestine spanning 2005–2024 to investigate the performance of the green economy (GE) and its impact on key sustainable development (SD) indicators, including poverty headcount ratio, GDP per capita, and unemployment rate. To address heterogeneity across observations and achieve normality, all variables are log-transformed prior to analysis. The econometric model regresses sustainable development outcomes on green economy dimensions and relevant control variables, specified as:

$$SD_i = \alpha + \beta_{1i} GE_i + \beta_{2i} LFi + \beta_{3i} TO_i + \beta_{4i} INF_i + \epsilon_i$$

Where  $SD_i$  denotes the sustainable development dimensions, the independent variable of interest is  $GE_i$ , which denotes the green economy dimensions, such as Efficient & Sustainable Resource Use (ESRU), Natural Capital Protection (NCP), Green Economic Opportunities (GEO), and Social Inclusion (SI). Whereas the control variables are labor force, trade openness, and inflation.

A major challenge in cross-sectional analysis is the issue of heteroskedasticity. The Ordinary Least Squares (OLS) method relies on the assumption of homoscedasticity, meaning that the variance of the error term remains constant across all observations. However, in practice, cross-sectional datasets frequently exhibit heteroskedasticity, which violates this assumption. To overcome this limitation, the Generalized Least Squares (GLS) estimator is often considered more appropriate than OLS.

### 3.2 Diagnostics check

Model evaluation represents a vital phase following the estimation process, as it allows researchers to verify the robustness, validity, and reliability of the econometric model. This step ensures that the model is not affected by common econometric issues such as heteroskedasticity, multicollinearity, or non-normal residuals.

To examine heteroskedasticity, the study employs the Breusch–Pagan (BP) test, a widely recognized diagnostic procedure that determines whether the variance of the error terms remains constant across observations. The test produces an F-statistic and an associated p-value, which is then compared against a 5% significance level. If the p-value exceeds 0.05, the null hypothesis of

homoscedasticity cannot be rejected, indicating that the residuals exhibit constant variance and that heteroskedasticity is not a problem within the model.

Assessment of multicollinearity among explanatory variables is carried out using the Variance Inflation Factor (VIF). This measure evaluates how much the variance of each estimated coefficient is inflated due to intercorrelations among the independent variables. A VIF value equal to 1 signifies the absence of multicollinearity; values between 1 and 5 denote mild to moderate correlation; values between 5 and 9 imply significant correlation; and values greater than 10 indicate severe multicollinearity, which may undermine the precision and reliability of the regression coefficients (Akinwande, Dikko, & Samson, 2015; Midi, Sarkar, & Rana, 2019). Mathematically, the VIF can be expressed as

$$\text{VIF} = \frac{1}{1 - R_i^2}$$

The third diagnostic test is the Shapiro–Wilk test, which assesses whether the residuals follow a normal distribution. This test compares the calculated probability value with a significance threshold of 5% under the null hypothesis of normality. If the probability value is greater than 0.05, the null hypothesis is not rejected, indicating that the residuals are normally distributed. Conversely, if the probability value is less than 0.05, the null hypothesis is rejected, suggesting a departure from normality (Razali & Wah, 2011; Yap & Sim, 2011).

### 3.3 Data source

The dataset employed in this research was developed following a comprehensive review of prior empirical and theoretical studies. One of the major obstacles identified in the literature is the limited availability of consistent, long-term data on green economy indicators, which constrains the ability of researchers to thoroughly analyze its contribution to sustainable development. To overcome this limitation, this study compiles cross-sectional data for Palestine spanning the years 2005–2024, derived from several authoritative and credible data sources.

The sustainable development (SD) dimension is represented by three primary indicators: gross domestic product (GDP) per capita, total unemployment rate (as a percentage of the labor force), and the poverty headcount ratio (at national poverty lines, expressed as a percentage of the total population). The green economy (GE) is captured through its four core dimensions: Efficient and Sustainable Resource Use (ESRU), Natural Capital Protection (NCP), Green Economic Opportunities (GEO), and Social Inclusion (SI).

In addition, several control variables are incorporated into the analysis to account for broader economic influences, including labor force participation, trade openness, and inflation (INF). All economic indicators and control variables were sourced from the World Bank and other reputable databases to ensure consistency, accuracy, and comparability of the results.

**Table 1:** Descriptions of the variables.

Variables	Symbols	Measurements	Data Source
Dependent variables			
Poverty headcount ratio	POV	(% of the population)	WDI
Unemployment	UNP	(% of the total labor force)	WDI
GDP Per Capita	GDP	GDP per capita (current US\$)	WDI
Independent variables			
Efficient & Sustainable Resource Use	ESRU	Energy intensity, water use efficiency, and material footprint per capita or per GDP.	World Bank
	NCP	Percentage of terrestrial and marine protected areas, and forest area as a share of total land area.	World Bank
Natural Capital Protection	GEO		
Green Economic Opportunities		Employment in renewable energy and energy efficiency sectors, investment in green technologies, and the share of environmentally sustainable industries in GDP.	World Bank
	SI	Access to education and healthcare, employment rates across gender and minority groups, poverty reduction, and social protection coverage.	World Bank
Control variables			
Labor Force	LF		
Trade Openness	TRO		
Inflation	INF	Total labor force	WDI
		Trade (% of GDP)	WDI
		Inflation yearly rate	World Bank

Source: Authors

#### 4. Empirical results

The empirical investigation begins with a preliminary evaluation of the study variables using descriptive statistics and a correlation matrix. Descriptive statistics provide an overview of the essential characteristics of the dataset, including the number of observations (N), range, mean, and standard deviation for each variable. The correlation matrix illustrates both the magnitude and direction of the relationships between the dependent and independent macroeconomic indicators (see Table 3).

As presented in Table 2, GDP per capita shows the widest dispersion, ranging from 1,543.7 to 3,800, with an average value of 2,928.83 and a standard deviation of 739.39. In contrast, the unemployment rate exhibits the lowest variability, characterized by a mean of 0.2223, a standard deviation of 0.02903, and a minimum value of 0.176. In general, the independent variables demonstrate relatively modest fluctuations, indicating a stable distribution throughout the analyzed period.

**Table 2:** Descriptive statistics.

Variables	Obs.	Min.	Max.	Mean	Std. Deviation
POV	187	.22	.355	.2850647	.0365007
UNP	198	.176	.264	.2223333	.029037
GDP	220	1543.7	3800	2928.83	739.3872
ESRU	154	47.27	52.93	49.645	1.841752
NCP	154	32.18	32.83	32.58643	.2237782

GEO	154	47.84	58.62	53.08857	3.679683
SI	154	47.8	53.71	52.08714	1.820202
LF	198	.23	.31	.2766667	.0269423
TRO	220	.65	.92	.738	.0751109
INF	220	-.7	.537	.0163125	.2097806

Source:  
Authors

**Table 3:** Correlation matrix.

Variab les	POV	UNP	GDP	ESR U	NC P	GE O	SI	LF	TR O	INF
POV	1.0000									
UNP	0.7905	1.00								
GDP	(0.000)	00	1.000							
ESRU	0.8275	0.68	0	1.000						
NCP	(0.000)	09	-	0	1.00					
GEO	-0.8976	-	0.700	-	00	1.00				
SI	(0.000)	0.78	5	0.808	-	00	1.0000			
LF	0.8920	02	0.874	5	0.82	-	0.6645	1.0000		
TRO	(0.000)	0.84	3	0.689	21	0.52	0.3779	0.4014	1.00	
INF	-0.7297	40	-	0	0.78	48	-0.0949	0.3512	00	1.00
	(0.000)	-	0.726	-	01	-	(0.457)	(0.3638)	0.11	00
	0.7359	0.89	4	0.688	0.60	0.62			79	
	(0.000)	20	0.831	7	79	50				
	0.5299	0.55	1	-	0.40	-				
	(0.000)	88	0.800	0.362	29	0.27				
	0.7241	0.48	8	8	-	59				
	(0.0924)	68	0.487	-	0.29	0.30				
	-0.2518	0.36	8	0.599	95	70				
	(0.0043)	62	0.070	5						
		-	5	0.353						
		0.31		0						
		19								

Source: Authors, noted: values between brackets represent the 1% and 5% significance level.

These results provide robustness and stability to the study model, reducing inconsistencies and variability in the data. As shown in Table 3 of the correlation, only social inclusion and the labor force are insignificantly correlated with inflation. While all other variables are significantly correlated at the 1% and 5% level, poverty and trade openness are significantly correlated at the 10% level.

#### 4.1 Cross-Sectional Regression Results

This section outlines the estimated coefficients that examine the link between sustainable development (SD) and the green economy (GE) through the Generalized Least Squares (GLS) estimation technique. Table 4 summarizes the regression outcomes, with the poverty headcount ratio serving as the dependent variable. The findings reveal that three out of the four GE dimensions—Efficient and Sustainable Resource Use (ESRU), Natural Capital Protection (NCP), and Social Inclusion (SI)—have positive and statistically significant effects on poverty at the 1% significance level. Conversely, Green Economic Opportunities (GEO) demonstrates a negative and significant relationship with poverty at the same level, implying that while most GE dimensions are positively correlated with the poverty rate, GEO may contribute to poverty alleviation. These outcomes partially correspond with Lukas (2015), who identified a strong inverse connection

between GE and poverty, yet diverge from Barbier (2016), who suggested that shifting toward a green economy might impede growth in developing nations by lowering GDP and per capita income, thereby intensifying poverty. Furthermore, the labor force variable displays a significant negative coefficient at the 1% level, supporting Tasri (2016), who found an inverse relationship between labor force participation and green economic expansion. In contrast, both CO<sub>2</sub> emissions and trade openness were found to be statistically insignificant, differing from the conclusions of Rusiawan et al. (2015) and Fawaz and Soliman (2016), who reported a negative influence of CO<sub>2</sub> emissions on economic growth during the green transition.

**Table 4:** GE and SD (Poverty Headcount Ratio) GLS, during 2005-2024

Poverty headcount ratio	Coef.	Std. Err.	z	P >  z	[95% Conf. Interval]		VIF
Constant	-1.715802	.1014602	-16.91	0.000***	-1.91466	-1.516944	
ESRU	.0016338	.0004385	3.73	0.000***	.0007744	.0024932	5.90
NCP	.0543464	.0030057	18.08	0.000***	.0484554	.0602375	7.82
GEO	-.0024775	.0002171	-11.41	0.000***	-	-	3.53
SI	.0043234	.0003838	11.26	0.000***	.0035711	.0050757	3.42
LF	-.5126367	.0430427	-11.91	0.000***	-	-	6.75
TRO	.3063576	.0102278	29.95	0.000***	.2863116	.3264037	2.66
INF	.0104206	.0022001	4.74	0.000***	.0061085	.0147328	1.58
Num. of obs. = 143							
F (7, 135) = 1333.33							
prob > F = 0.0000							
R-Sq. = 0.9857							
Adj. R-Sq = 0.985							

Note: \* Significant at 10%; \*\* Significant at 5%; \*\*\* Significant at 1%.

In addition, the model’s goodness of fit was evaluated through the coefficient of determination (R<sup>2</sup>), which reveals that approximately 98.5% of the variation in the dependent variable (POV) is explained by the model. To verify the robustness of the results, several diagnostic tests were performed. The Breusch–Pagan test confirmed the absence of heteroscedasticity, while the Shapiro–Wilk test indicated that the data follow a normal distribution, as both tests failed to reject the null hypothesis. Additionally, all variance inflation factor (VIF) values were below 10, as reported in Table 4, suggesting that multicollinearity does not pose a problem in the estimated model.

**Table 5:** GE and SD (Unemployment) GLS, during 2005-2024

Unemployment	Coef.	Std. Err.	z	P >  z	[95% Conf. Interval]	
Constant	-.6222815	.3450878	-1.80	0.071*	-1.298641	.0540782
ESRU	.0003211	.0014914	0.22	0.830	-.002602	.0032441
NCP	.0379471	.0102229	3.71	0.000***	.0179105	.0579837
GEO	-.0071886	.0007386	-9.73	0.000***	-	-.005741
SI	.0028101	.0013054	2.15	0.031**	.0002515	.0053687
LF	-.7462108	.1463976	-5.10	0.000***	-	-
TRO	.0782496	.0347868	2.25	0.024**	.0100687	.1464306
INF	.0340556	.007483	4.55	0.000***	.0193891	.0487221

Num. of obs. =  
143  
F(7, 135) =  
144.05  
prob > F = 0.0000  
R-Sq. = 0.8819  
Adj. R-Sq =  
0.8758

Note: \* Significant at 10%; \*\* Significant at 5%; \*\*\* Significant at 1%.

Table 5 presents the regression outcomes where the total unemployment rate is modeled against the study's independent variables. The GLS estimation reveals that Natural Capital Protection (NCP), Green Economic Opportunities (GEO), and Social Inclusion (SI) are statistically significant among the GE dimensions at the 1% and 5% levels, respectively. These results indicate a positive association between GE and unemployment, suggesting that a one-unit increase in NCP and SI leads to a 0.037 and 0.0028 rise in unemployment, respectively. This outcome contrasts with the findings of Gagliardi et al. (2016) and Markandya et al. (2016), who reported a positive linkage between environmentally sustainable innovation and job creation. Conversely, Efficient and Sustainable Resource Use (ESRU) exhibits an insignificant relationship with unemployment, aligning with Çetin and Eğrican (2011), who concluded that the green economy may negatively affect employment levels.

Additionally, the labor force variable is found to be negatively significant at the 1% level, while trade openness (TRO) and inflation (INF) display positive correlations with unemployment. The goodness of fit of the model, indicated by an  $R^2$  value of 87.5%, suggests that the independent variables collectively explain a large proportion of the variation in unemployment. Moreover, the F-test results confirm that the overall model is statistically significant at the 1% level, implying that the included variables jointly exert a meaningful impact on unemployment.

**Table 6:** GE and SD (GDP per capita) GLS, during 2005-2024

GDP per capita	Coef.	Std. Err.	z	P >  z	[95% Conf. Interval]	
Constant	-	3188.762	-8.49	0.000***	-	-20810.9
	27060.76				33310.62	
ESRU	16.33	13.78105	1.18	0.236	-	43.34036
					10.68035	
NCP	827.7984	94.46437	8.76	0.000***	642.6516	1012.945
GEO	-	6.824645	-3.25	0.001***	-	-
	22.20611				35.58217	8.830056
SI	66.73168	12.06292	5.53	0.000***	43.08878	90.37457
LF	-	1352.778	-0.44	0.660	-	2056.516
	594.8803				3246.276	
TRO	779.4414	321.4455	2.42	0.015**	149.4198	1409.463
INF	512.7654	69.14648	7.42	0.000***	377.2408	648.29
Num. of obs. = 143						
F(7, 135) = 246.56						
prob > F = 0.0000						
R-Sq. = 0.9275						
Adj. R-Sq =						
0.9237						

Note: \* Significant at 10%; \*\* Significant at 5%; \*\*\* Significant at 1%. Source: Authors

Lastly, Table 6 represents the results of regressing GDP per capita on the independent variables of the study. The GLS shows that the four dimensions of the green economy are positively significant at a 1% significance level, except GEO, which shows a negative relationship with GDP per capita. The strong positive and significant relationship between the GE and GDP per capita resembles the findings of Lukas (2015), Fernandes et al. (2021), Chen et al. (2021), and Fong et al. (2022). The estimation shows that the labor force is not related to GDP per capita. Also, the ESRU shows an insignificant relationship with the GDP per capita, so this independent variable is not related to GDP per capita. In addition, the goodness of fit of the estimated model can be evaluated by examining the  $R^2$  value, which shows that the model can account for 92.3% of the variation in the dependent variable, GDP per capita. Also, to test the significance of the model, an F-test was applied, and it was found that the estimated model was significant at 1% significance level, which indicates the significance of the variables jointly in their effect on GDP per capita.

## 5. Discussion of Results

The positive coefficient of the green economy (GE) highlights its role as a catalyst for economic growth and underscores its importance in achieving sustainable development (SD) objectives. Such growth is often driven by greater adoption of environmentally sustainable and cost-effective technologies, the expansion of renewable energy sources, and the diversification of the energy portfolio, consistent with Dauda et al. (2021) and Chen et al. (2023). Among the four GE dimensions, Natural Capital Protection (NCP) and Social Inclusion (SI) exert a favorable influence on per capita income. NCP incorporates fiscal and regulatory measures that facilitate the transition toward a greener economy without undermining overall economic performance (Acosta et al., 2020; Kurniawan et al., 2021).

The positive relationship between GE and employment can be attributed to the promotion of social equity, the expansion of job opportunities, and the development of labor markets, which aligns with the observations of Ofori et al. (2023) and Fan et al. (2023). From an environmental standpoint, nations with abundant and well-managed natural resources tend to achieve higher levels of economic growth, as natural capital serves as a key input in production. Consequently, efficient management of environmental assets can strengthen overall economic performance.

However, the impact of GE on unemployment appears more complex. The findings indicate that two GE dimensions have a significant positive association with unemployment, though GE primarily influences labor markets indirectly through increased productivity and output. As economic output expands, employment tends to rise and unemployment declines, which is consistent with ILO evidence that green transition strategies can generate millions of new jobs (Van der Ree, 2019; Jensen, 2022).

The results indicate that the green economy (GE) has a strong, negative relationship with poverty, suggesting that countries actively implementing green policies and fostering green economic opportunities can achieve meaningful poverty reduction. This finding is consistent with prior research emphasizing the role of GE in promoting inclusive and sustainable growth. For instance, Barbier (2016) argues that integrating environmental sustainability with economic development can improve livelihoods, particularly in developing economies, by creating new employment opportunities and enhancing resource efficiency. Similarly, Fernandes et al. (2021) highlight that sustainable technology transfer and innovations, which are integral components of GE, can lead to improved economic outcomes for marginalized populations.

The specific impact of natural capital protection (NCP) on poverty reduction aligns with studies showing that safeguarding ecosystems directly benefits local communities. For example, Çetin and Eğrican (2011) found that investment in renewable energy and sustainable resource management not only reduces environmental degradation but also generates employment, raising household incomes. Likewise, green economic opportunities (GEO) contribute to poverty alleviation by improving access to essential resources, echoing Luukkanen et al. (2019) and Gawusu et al., (2022), who observed that sustainable management of natural resources enhances food security and nutrition, thereby lowering poverty levels.

Comparatively, these results reinforce the broader consensus in the literature that GE is more than an environmental strategy—it is a socio-economic tool. Fong et al. (2022) and Mohsin et al. (2022) similarly emphasize that the multidimensional approach of GE, combining ecological protection with economic innovation, produces tangible improvements in human welfare. However, some studies note that the effectiveness of GE policies in reducing poverty depends on complementary institutional frameworks, such as social protection systems and skill development programs (Dauda et al., 2021; Chen et al., 2023). Without such support mechanisms, the benefits of GE may be unevenly distributed, potentially leaving vulnerable populations behind.

Overall, these findings confirm that GE, particularly through NCP and GEO, is a viable pathway to sustainable poverty reduction, supporting prior empirical evidence that environmentally sustainable economic development enhances both ecological and social outcomes.

## **6. Conclusion and Policy Recommendations**

The transition toward a green economy (GE) offers substantial opportunities to achieve sustained economic growth and poverty alleviation. This potential stems from two major global developments. First, the transformation of economic structures and emerging risks has prompted a re-evaluation of traditional growth strategies. Second, there is growing recognition that natural resources form the backbone of economic and physical infrastructure and must be managed as strategic assets to sustain prosperity and human welfare. Consequently, many countries are incorporating renewable energy sources and sustainable resource management practices to address environmental degradation, biodiversity loss, and climate change caused by greenhouse gas emissions. GE, therefore, represents an evolving economic paradigm that encourages growth, job creation, and poverty reduction—particularly in developing and emerging economies.

Empirical findings demonstrate that GE positively influences GDP per capita, employment, and poverty reduction, whereas the GEO dimension shows a negative association with these variables in Palestine. These outcomes emphasize GE's potential to drive sustainable progress through enhanced productivity, expanded employment, and reduced poverty. Governments, especially in developing nations, should therefore prioritize GE by establishing standardized definitions, measurement indicators, and robust institutional frameworks, while promoting public-private investment in green sectors.

Furthermore, policies that support research and development (R&D), technological innovation, workforce reskilling, and the institutionalization of renewable energy are essential for long-term sustainability. Targeted economic measures—such as green tax reforms, subsidy restructuring, incentives for clean technologies, and preferential procurement—can accelerate the adoption of sustainable practices. Integrating environmental, economic, and social objectives into national policy will ensure inclusive and equitable development, promote job creation, and advance the Sustainable Development Goals (SDGs)—particularly SDG 1 (No Poverty) and SDG 8 (Decent Work and Economic Growth).

Future research should extend this framework to encompass additional SDG dimensions and conduct comparative analyses between developed and developing countries to provide a broader understanding of how GE contributes to sustainable development worldwide.

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