

Determinants Of Renewable Energy Share In OIC Countries: The Roles Of International Financial Flows, Installed Capacity, And Economic Growth

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ABSTRACT

This study examines determinants influencing renewable energy proportion in Organization of Islamic Cooperation (OIC) countries, focusing on the effects of international financial flows, installed renewable electricity capacity, and economic growth. Given the global imperative for energy transition, this research explores how these factors impact renewable energy adoption in nations with diverse socioeconomic contexts. The research uses a panel dataset of 50 OIC countries over 23 years. The dependent variable is renewable energy proportion in total final energy consumption, while independent variables include international financial flows for clean energy, installed renewable electricity capacity per capita, and GDP per capita. For robust model specification, econometric methods including Fixed Effects Model (FEM), Random Effects Model (REM), and Hausman test are applied. System GMM estimation and Driscoll–Kraay standard errors address heterogeneity and potential endogeneity. Results show that installed renewable capacity per capita has a significant positive impact on renewable energy share, highlighting infrastructure expansion's role in energy transition. International financial flows and GDP per capita show significant negative effects, indicating financial inflows are not adequately directed towards renewable projects and economic growth remains dependent on fossil fuels. The model accounts for nearly 98% of the variation in renewable energy share. The study concludes that direct investment in renewable infrastructure is most effective for promoting adoption, while financial flows and economic growth need stronger alignment with sustainability goals. For OIC countries, successful renewable energy transition depends on channeling resources into green sectors, integrating renewable policies into economic planning, and aligning growth with sustainability.

Keywords: Renewable Energy Share, International Financial Flows, Installed Renewable Capacity, GDP per Capita, OIC Countries.

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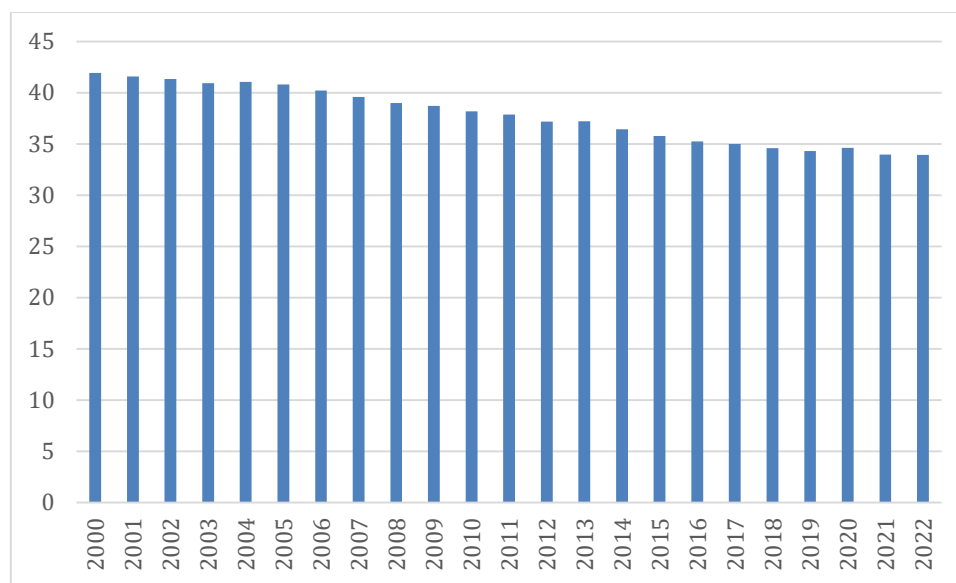
INTRODUCTION

The global transition to renewable energy is becoming increasingly vital for addressing climate change and fostering sustainable development. This shift holds particular significance for the Organization of Islamic Cooperation (OIC) countries, which face unique challenges and opportunities in adopting renewable energy sources. To better understand these dynamics, this study investigates the determinants of renewable energy share in OIC countries, emphasizing the roles of international financial flows, installed capacity, and economic growth. In this context, economic integration also plays an indirect role, as collaborative frameworks among nations that harmonize trade and financial policies can facilitate cross border capital movement, reduce barriers, and improve efficiency. Such arrangements not only stimulate trade flows but also support investment, lower production costs, and ultimately enhance competitiveness and welfare (Khusni, 2025; Krugman & Obstfeld, 2005).

The research employs a comprehensive dataset encompassing 50 countries over 23 years, providing a robust foundation for analysis. The dependent variable, renewable energy share in total final energy consumption, serves as a key indicator of progress in renewable energy adoption. As

noted by Pereira et al. (2021), "The share of renewable energy in total final energy consumption is a critical metric for assessing a country's commitment to sustainable energy transition".

Figure 1. Average Share of Renewable Energy in Total Final Energy Consumption in OIC Countries (%)



Source: World Bank; IRENA; SESRIC.

The share of renewable energy in total final energy consumption from 2000 to 2022 illustrates the trend in the proportion of renewable energy within the total final energy consumption in OIC countries over a span exceeding two decades. Initially, in 2000, the share of renewable energy was relatively high, approximately 42%. However, by 2022, this share had gradually declined to about 34%. This reduction is indicative of the increasing consumption of fossil fuels, which has accompanied economic growth and urbanization, as well as the insufficient impact of new investments in renewable energy to counterbalance the rising energy demand.

This decline in renewable energy share presents significant challenges for OIC countries in meeting their climate change mitigation goals and energy security objectives. To reverse this trend, policymakers need to implement more aggressive renewable energy policies and incentives, while also addressing barriers to renewable energy adoption. Investments in renewable energy infrastructure, technology transfer, and capacity building will be crucial for OIC countries to transition towards a more sustainable energy future.

Three primary independent variables are considered in this study. First, international financial flows to developing countries in support of clean energy research and development and renewable energy production are examined. Briera & Lefèvre (2024) argue that "International financial support plays a pivotal role in accelerating renewable energy deployment in developing nations". Second, the installed renewable electricity generating capacity per capita is analyzed to assess the impact of infrastructure development on renewable energy share. Third, GDP per capita is included to investigate the relationship between economic growth and renewable energy adoption.

The exploration of renewable energy shares in Organization of Islamic Cooperation (OIC) countries necessitates a comprehensive understanding of the various determinants influencing this sector's dynamism. A significant element involves examining the roles of international financial flows, installed capacity, and economic growth. International financial flows, such as foreign direct investment (FDI) and portfolio investments, play a crucial role in providing essential capital that can be directed toward renewable energy projects. For instance, the behavior of capital flows can significantly impact economic growth, as evidenced by several studies outlining their effect within developing economies (Caballero & Simsek, 2020).

Moreover, capital flow volatility and foreign financial policies can alter the financial stability and investment environment crucial for developing the renewable sector (Kono, 1998). Installed capacity, which refers to the total capacity of renewable energy technologies installed within a

country, is another vital determinant. It reflects a country's infrastructural readiness to generate and sustain renewable energy. The establishment of extensive infrastructure is often contingent on economic growth and the political commitment to support renewable energy advancements. Economic growth itself can either drive or be driven by increased renewable energy utilization (Hannan, 2017).

By exploring these determinants, this research aims to provide valuable insights into the factors driving renewable energy adoption in OIC countries and inform policy decisions to promote sustainable energy transitions. The study employs a panel data analysis approach, utilizing fixed effects and random effects models to account for country specific characteristics and temporal variations. Control variables such as population growth, urbanization rate, and energy intensity are incorporated to enhance the robustness of the analysis. The findings reveal a significant positive relationship between international financial flows and renewable energy share, highlighting the importance of external support in fostering renewable energy adoption in OIC countries.

Therefore, policy frameworks aiming to boost renewable energy shares must consider these determinants in tandem. Understanding how they interact can enlighten policymakers on strategies to effectively harness these elements, leading to more sustainable energy patterns and enhanced developmental outcomes in the OIC countries.

Several pivotal studies investigate the determinants of the renewable energy share, offering insights into their relationship with international financial flows, installed capacity, and economic growth, particularly within the context of Organization of Islamic Cooperation (OIC) countries. Mankiw (2012) posits that a country's economic growth rate serves as a crucial benchmark for evaluating its developmental achievements and future prospects, a perspective also underscored in recent research by (Khusni & Sunaryati, 2024).

This perspective is particularly relevant when examining the renewable energy landscape in OIC countries, where economic growth and energy transitions are closely intertwined. The integration of renewable energy sources into these economies presents both challenges and opportunities, requiring careful consideration of financial, technological, and policy factors. As OIC countries navigate this complex terrain, understanding the interplay between economic growth, renewable energy adoption, and international financial flows becomes increasingly critical for sustainable development strategies. A study focused on the OIC countries evaluates the efficiency of renewable energy adoption by analyzing key factors such as GDP, labor force, and export to import ratios. This research finds significant variations in efficiency across regions within the OIC, and emphasizes the importance of increasing investment in renewable energy infrastructure to enhance efficiency. Notably, Qatar ranks high in efficiency, whereas countries like Algeria, Comoros, and Indonesia show considerable potential for improvement (Rusydiana et al., 2025).

Additional research in West African countries, members of the WAEMU, highlights that socioeconomic and financial conditions significantly influence renewable energy production. The study suggests that renewable energy consumption and GDP per capita are significant factors promoting renewable energy production, thereby reinforcing the idea that economic growth and financial flows are critical to advancing renewable energy (Bayale et al., 2021).

Economic growth, as measured by GDP per capita, is both a driver and an inhibitor in terms of renewable energy adoption. On one hand, higher GDP can spur investments in renewable technology; on the other hand, as observed in OECD countries, increases in GDP can lead to lower investment in renewable energy if economic growth priorities are not aligned with sustainability goals (Melnik et al., 2020). This juxtaposition calls for enhanced policy measures to guide economies towards sustainable renewable energy integration.

At the global stage, the impact of renewable energy on economic growth has shown mixed results. For instance, in BRIC countries, an increased share of renewable energy in the total energy mix has been linked to slower economic growth, suggesting potential tradeoffs between rapid economic expansion and the adoption of renewable sources (Venkatraja. B, 2020). Yet, the bidirectional causality observed in European studies indicates that while renewable energy can indeed drive economic growth, sustainable economic policies are essential to fully leverage renewable resources (Marinaş et al., 2018).

Theoretical frameworks built on these studies emphasize that while international financial flows, reflecting investments specifically targeted at clean energy projects, can catalyze renewable energy development, this requires supportive regulatory frameworks and efficient financial mechanisms at the national level (Balcilar et al., 2023). Moreover, countries need to consider the socio economic elements such as urbanization and industrialization processes which may initially increase carbon emissions but gradually support cleaner technologies as economies mature (Liu et al., 2024).

In conclusion, for OIC countries to increase their share of renewable energy effectively, a comprehensive approach involving financial investment, expanding installed capacity, and aligning economic growth with renewable energy goals is essential. These determinants are interconnected and require countries to adopt scalable and adaptive policies that support sustainable development through renewable energy adoption.

METHOD

This study employs panel data covering multiple countries over a specified period to analyze the determinants of the share of renewable energy in total final energy consumption. The dependent variable is the share of renewable energy in total final energy consumption (%), while the independent variables include: (1) international financial flows to developing countries supporting clean energy and renewable production (constant 2020 prices, million USD), (2) installed renewable electricity generating capacity per capita (watts per person), and (3) GDP per capita (constant 2015 prices, USD). Data were collected from reputable sources such as the World Bank, the International Renewable Energy Agency (IRENA), and the United Nations Statistics Division to ensure consistency and comparability across countries and over time.

The general econometric specification of the baseline model is expressed as follows:

$$RE_Share_{it} = \alpha + \beta_1 IF_Flow_{it} + \beta_2 RE_Capita_{it} + \beta_3 GDP_pc_{it} + \mu_i + \varepsilon_{it}$$

Where RE_Share_{it} represents the renewable energy share in country i at time t ; IF_Flow_{it} denotes international financial flows supporting clean energy; RE_Capita_{it} refers to installed renewable electricity generating capacity per capita; GDP_pc_{it} represents GDP per capita μ_i captures unobserved country specific effects; and ε_{it} is the idiosyncratic error term.

The analysis applies panel data estimation techniques, specifically the Fixed Effects Model (FEM) and the Random Effects Model (REM), to account for unobserved heterogeneity across cross sectional units that is constant over time. The choice between FEM and REM is based on the Hausman test. To address potential endogeneity and capture dynamic effects, the two step System Generalized Method of Moments (System GMM) estimator is employed, following the approaches of Albulescu et al. (2020) and Naseem & Guang Ji (2021).

Prior to estimation, panel unit root tests including the Levin, Lin & Chu (LLC) test and the Im, Pesaran & Shin (IPS) test are conducted to ensure the stationarity of the variables. Subsequently, panel cointegration tests are performed to examine the existence of long run relationships among the variables, following the methodology of Raza & Shah (2018). The Hausman test is used to determine the most appropriate model specification.

To ensure the robustness of results, Driscoll Kraay standard errors are applied to account for cross sectional dependence and heteroskedasticity (Fuinhas et al., 2017). In addition, alternative specifications such as dynamic panel data models and threshold regression models are estimated to detect potential nonlinear relationships (Muazu et al., 2023). The interpretation of results considers both statistical and economic significance, and discusses policy implications for increasing the share of renewable energy.

Table 1. Variables, Definitions, Units, and Data Sources

Variable	Code	Operational Definition	Unit	Data Source
Share of renewable energy in total final energy consumption	RE_Share	Proportion of final energy consumption from renewable sources	Percent (%)	World Bank, IRENA, Sesric
International financial flows for clean energy	IF_Flow	Inflows to developing countries supporting clean energy and renewable production (constant 2020 prices)	Million USD	UN Statistics, World Bank
Installed renewable electricity capacity per capita	RE_Capita	Installed renewable electricity generating capacity divided by total population	W per person	IRENA
GDP per capita	GDP_pc	Gross Domestic Product per capita (constant 2015 prices)	USD	World Bank

FINDING AND DISCUSSION

The selection of an appropriate panel data model was carried out using the Chow and Hausman tests. The Chow test result showed a probability value of 0.000, which is smaller than the 5% level of significance ($\alpha = 0.05$). This indicates that the Fixed Effect Model (FEM) is preferable to the Pooled Least Squares approach, as it better accounts for individual heterogeneity across the sample. Subsequently, the Hausman test was performed to distinguish between the Fixed Effect and Random Effect Models. The test yielded a probability value of 0.0005, also below the 0.05 threshold, thereby reinforcing that FEM is the most suitable estimation technique. This double confirmation through both tests provides strong statistical justification for the application of FEM in the present study, ensuring that the parameter estimates are unbiased and consistent.

Table 2. Fixed Effect Model Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant (C)	41.61486	0.500582	83.13298	0.0000
International Financial Flows (IF_Flow)	-0.003397	0.000872	-3.897288	0.0001
Installed Renewable Capacity (RE_Capita)	0.022580	0.004294	5.258977	0.0000
GDP per Capita (GDP_pc)	-0.001564	0.000166	-9.430589	0.0000

In order to validate the robustness of the chosen model, classical assumption tests were conducted. The multicollinearity test revealed that the correlation coefficients among the independent variables were consistently below the threshold of 0.80. This finding suggests that the explanatory variables International Financial Flows, Installed Renewable Electricity per Capita, and GDP per Capita are sufficiently independent of one another, and thus do not pose a multicollinearity problem that could distort the regression outcomes. Furthermore, heteroskedasticity was examined using the Glejser test, and the results indicated that all independent variables had p-values exceeding 0.05. This implies that the residual variance is constant across observations, eliminating concerns of heteroskedasticity and thereby strengthening the credibility of the regression estimates.

The regression analysis using FEM produced the following model:

$$RE_Share_{it} = 41.61468 - 0.003397 IF_{Flow_{it}} + 0.022580 RE_{Capita_{it}} - 0.001564 GDP_pc_{it} + \mu_i + \varepsilon_{it}$$

The estimated constant value of 41.61468 suggests that in the absence of changes in International Financial Flows, Installed Renewable Electricity per Capita, and GDP per Capita, the Renewable Energy Share in Total Final Energy Consumption would remain at a baseline level of 41.61468. The coefficient for International Financial Flows was found to be negative (-0.003397), implying that greater financial inflows tend to reduce the renewable energy share, *ceteris paribus*. This counterintuitive result may suggest that such flows are not primarily directed towards renewable sectors, but rather into conventional energy or other economic activities that undermine renewable penetration. Conversely, the coefficient for Installed Renewable Electricity per Capita was positive (0.022580), highlighting that the expansion of renewable electricity capacity is a

significant driver of increased renewable energy consumption. Lastly, GDP per Capita was associated with a negative coefficient (-0.001564), suggesting that rising income levels and economic growth correspond with a decline in the renewable energy share, possibly due to an increased reliance on fossil fuel based energy in growing economies.

The explanatory power of the model, as reflected in the Adjusted R-squared value of 0.977941, is notably high. This indicates that nearly 98% of the variation in Renewable Energy Share is explained by the independent variables included in the model, underscoring the robustness and reliability of the regression specification. The F-test further confirmed the joint significance of the explanatory variables, with an F-statistic of 980.6005 and a significance level of 0.000000, far below the 0.05 threshold. This finding demonstrates that International Financial Flows, Installed Renewable Electricity per Capita, and GDP per Capita collectively exert a significant influence on the dependent variable. Moreover, the individual (t-test) results provided further insights: International Financial Flows ($p = 0.0001$) significantly and negatively affect renewable energy share, Installed Renewable Electricity per Capita ($p = 0.0000$) exerts a significant positive effect, and GDP per Capita ($p = 0.0000$) has a significant negative effect.

Taken together, these findings reveal important insights into the dynamics of renewable energy development. The positive and significant impact of installed renewable capacity suggests that direct investment in renewable energy infrastructure is essential for increasing its share in the total energy mix. However, the negative influence of both international financial inflows and GDP per capita signals that broader economic growth and capital mobility do not automatically translate into renewable energy adoption. Instead, they may encourage higher energy demand that is disproportionately met by conventional sources, thereby diminishing the relative contribution of renewables. This paradox underscores the necessity of channeling financial flows and economic growth trajectories toward sustainable energy investments, as well as the importance of designing policy frameworks that align capital allocation with environmental objectives.

International Financial Flows

The results indicate that International Financial Flows have a notable but adverse impact on the proportion of Renewable Energy in Total Final Energy Consumption. Theoretically, international capital inflows, such as Foreign Direct Investment (FDI), development aid, and green finance, are anticipated to positively influence the growth of renewable energy. According to theories of international finance and sustainable investment, these funds are expected to support renewable projects, facilitate technology transfer, and speed up the energy transition in developing and emerging economies (Dunning, 1993). Nevertheless, the negative impact observed suggests that a significant portion of these inflows is still channeled towards carbon heavy sectors, like extractive industries or fossil fuel infrastructure (Mielnik & Goldemberg, 2002; Pao & Tsai, 2011).

Rather than promoting renewable energy deployment, financial flows might unintentionally strengthen reliance on conventional energy sources. This deviation from theoretical expectations underscores the need for policy measures to ensure that international financial resources are aligned with sustainability goals. The effect of global financial movements on the share of renewable energy in total final energy consumption is a multifaceted issue. Numerous studies have explored how financial globalization, investments, and development aid impact the adoption and utilization of renewable energy. Research focusing on China shows that financial globalization can have a positive effect on renewable energy investments in both the short and long term. Linear models suggest a favorable impact, while non-linear models indicate that increased financial globalization boosts renewable energy investments. Conversely, a reduction in financial globalization leads to decreased investments, but this effect is only evident in the long term (Chen & Zhang, 2023).

A study focusing on Ethiopia highlights that international financial flows, including investments and development aid, play a significant role in the growth of renewable energy technologies. The research underscores the importance of sustainable finance programs in supporting renewable energy projects, with the manufacturing, mining, and service sectors having a notable impact on renewable energy consumption. However, the service and mining industries

negatively affect renewable energy use, indicating a need for diversification and greater adoption in sectors like manufacturing and agriculture (Getachew et al., 2024).

The availability of finance is crucial since renewable energy projects require substantial initial capital and have long payback periods. Effective financial institutions and markets are essential for facilitating investments in renewable sectors. Nonetheless, the short-term effects of financial markets on renewable investments are often minimal, highlighting the necessity for financial policies that improve access to finance for renewable energy projects (Sohail, 2023). Impact of Green Finance: Green finance, which includes sustainable investments and environmentally focused financial instruments, positively influences the development and integration of renewable energy, especially in developed countries and regions with stringent environmental regulations.

However, its impact is limited in less developed countries with weaker green financial development (Hou et al., 2023). There is a continuous need for international collaboration to enhance renewable energy investments, as highlighted in studies on global transitions to clean energy. These studies advocate for policy changes and a shift away from coal based investments to better align financial flows with renewable energy objectives, which might otherwise compete with non-renewable sectors (Quitow et al., 2019).

In conclusion, while international financial flows can significantly influence renewable energy investments and consumption, the effect is not uniformly positive across all sectors and regions. Variations in sectoral contributions, the nature of financial globalization, and regional financial development levels can lead to differences in how these flows affect renewable energy's share in total energy consumption.

Installed Renewable Electricity

The coefficient of Installed Renewable Electricity per Capita is both positive and statistically significant, aligning with theoretical expectations. Theories of energy transition and technological diffusion posit that the expansion of renewable electricity capacity directly increases the proportion of renewables within the total energy mix (Sovacool, 2016; Stern, 2003). Enhanced installed capacity augments the availability of clean energy, thereby displacing fossil based sources and contributing to sustainability objectives. This finding corroborates the theoretical assertion that investment in renewable infrastructure is a pivotal driver of the clean energy transition, supporting prior empirical studies that emphasize the centrality of capacity building in accelerating renewable energy adoption (Fuinhas et al., 2017; Sadorsky, 2009).

The positive and statistically significant coefficient for Installed Renewable Electricity per Capita is consistent with both theoretical expectations and empirical findings, as demonstrated by multiple studies. This correlation can be attributed to several factors. First, the deployment of renewable energy sources such as wind, solar, and other green technologies often results in economic benefits and environmental sustainability. For instance, renewable portfolio standards, which mandate a certain percentage of electricity to originate from renewable sources, serve as an economic instrument that stimulates growth in targeted areas (Mamkhezri et al., 2021).

These standards can lead to substantial local economic gains without significantly impacting the broader economy. Secondly, the renewable energy sector, supported by policies such as subsidies, fosters economic growth by creating jobs, increasing household income, and promoting welfare and employment, albeit having a smaller direct impact on CO₂ emissions reduction (Omoju et al., 2024). This indicates that investing in renewable energy infrastructure per capita is positively correlated with economic outcomes and supports environmental objectives.

Moreover, studies have highlighted the beneficial impacts of renewable energy on national and regional economies in various countries. For instance, the relationship between renewable energy consumption and ecological footprint demonstrates that renewable energy significantly reduces ecological footprints, thereby contributing to sustainability goals (Akyol Özcan, 2024). This suggests that increasing installed renewable energy capacity per capita could indeed reduce the ecological footprint.

Furthermore, renewable energy sources, unlike fossil fuels, typically have lower environmental impacts, which enhances their attractiveness as sustainable energy solutions.

Transitioning to renewable sources helps mitigate adverse environmental effects such as air pollution, a significant concern with traditional energy sources (Adeyeye et al., 2020). In summary, the positive coefficient of Installed Renewable Electricity per Capita being statistically significant reflects the embedded economic and environmental benefits associated with renewable energy investments. These benefits include economic growth through job creation and improved livelihoods, as well as environmental sustainability through reduced carbon footprints and pollution (Akyol Özcan, 2024; Mamkhezri et al., 2021; Omoju et al., 2024).

Economic Growth

The research reveals that GDP per Capita significantly negatively impacts the Renewable Energy Share. This finding challenges the common belief that higher income levels should eventually lead to environmental improvements through technological advancements, stricter regulations, and increased public demand for clean energy (Grossman & Krueger, 1995; Panayotou, 1997). The Environmental Kuznets Curve (EKC) hypothesis offers a reasonable explanation. According to EKC theory, economic growth initially leads to environmental degradation, including increased fossil fuel consumption, as nations undergo industrialization and urbanization. It is only after reaching a certain income level that growth begins to favor sustainability, resulting in a higher adoption of renewable energy (Apergis & Payne, 2010; Dinda, 2004).

The negative coefficient observed here implies that the economies in the sample may still be in the early growth phase of the EKC, where economic expansion is still heavily reliant on fossil fuels. Therefore, while theory suggests a non-linear (inverted U-shaped) relationship, the empirical findings reflect the pre-transition stage. The connection between GDP per capita and the proportion of renewable energy in total energy consumption is complex and can sometimes defy conventional expectations. Specifically, studies show that the effects vary depending on the economic context of countries and other moderating factors.

One research study examined the impact of GDP per capita and trade openness on renewable energy consumption and economic risk. The study concluded that a higher GDP per capita strengthens the stabilizing influence of renewable energy in economies with substantial trade openness. This finding implies that policies integrating economic growth and trade liberalization could enhance the adoption of renewable energy (Yadav, 2025). In the European Union, another study identified a modest yet positive correlation between GDP per capita and the proportion of renewable energy in final consumption. It suggested that real GDP per capita plays a significant role in determining the share of renewable energy, emphasizing the potential for more economically advanced countries to increase their use of renewable energy (Simionescu et al., 2020).

On the other hand, evidence suggests that there is no straightforward linear relationship between GDP per capita and emissions reductions linked to renewable energy in high-income settings. The findings point to a renewable energy paradox, where, despite high levels of renewable energy consumption, carbon emissions may become more intertwined with economic growth. This challenges the expected decoupling of economic growth from environmental harm at higher income levels. Consequently, developed countries may need to adopt a more nuanced approach, potentially incorporating non growth strategies alongside renewable energy policies (Thombs, 2017).

These findings demonstrate that the relationship between GDP per capita and renewable energy adoption is complex and influenced by various regional, economic, and policy factors. This intricate interaction necessitates careful policy consideration to ensure that economic growth aligns with sustainable energy transitions. Overall, these findings highlight the intricate nature of renewable energy dynamics. While investing in renewable infrastructure aligns with theoretical expectations and is evidently beneficial, both international financial flows and GDP growth produce outcomes that deviate from traditional assumptions. This indicates that, without robust governance and policy frameworks, economic growth and capital mobility might perpetuate fossil fuel based energy patterns rather than support clean energy. Therefore, aligning financial flows and growth paths with sustainability focused frameworks is essential to ensure that theoretical predictions of sustainable development are realized in practice (International Energy Agency (IEA), 2023; Stern, 2003).

CONCLUSIONS

This research provides valuable understanding of the factors shaping renewable energy adoption across OIC countries. The analysis highlights that installed renewable capacity plays the most decisive role, demonstrating that infrastructure development is fundamental for expanding the share of clean energy. In contrast, international financial flows show a negative effect, implying that global funding has not been effectively channeled into renewable initiatives and that stronger policy mechanisms are needed to direct external capital toward sustainable projects. Similarly, the inverse association between economic growth and renewable energy share points to a continued dependence on fossil fuels in the early stages of development, reinforcing the importance of embedding renewable energy strategies within national economic planning. Overall, the results suggest that achieving a successful energy transition in OIC countries requires a comprehensive approach that prioritizes domestic investment in renewable infrastructure, redirects international finance toward green sectors, and ensures that growth strategies are consistent with long-term sustainability. Nevertheless, the interpretation of these findings should take into account several limitations, such as the exclusive focus on OIC members that constrains the generalizability of the results, the restricted time coverage that may not capture longer-term dynamics, and the limited availability of certain data which could reduce analytical completeness. Moreover, country-specific conditions not included in the model may exert unobserved influences, while possible inconsistencies in reporting by member states might affect accuracy. Finally, methodological boundaries remain in addressing the full complexity of interrelationships among the examined variables.

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