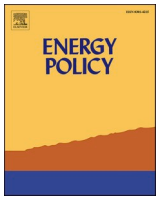
Energy Policy 198 (2025) 114488

Contents lists available at ScienceDirect

Energy Policy

journal homepage: www.elsevier.com/locate/enpol



Transparency in energy-rich developing countries: A solution for energy poverty?

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ARTICLE INFO

JEL classification:
O13
Q34
Q48
C23

Keywords:
Energy poverty
Energy-rich countries
Extractive industries transparency initiative (EITI)
Panel data models

ABSTRACT

Despite extensive research on the paradox of energy poverty in energy-rich developing countries, the effectiveness of transparency policies in resource management remains underexplored. This study addresses this issue by evaluating the impact of the Extractive Industries Transparency Initiative (EITI) on mitigating the resource curse and alleviating energy poverty. By analyzing a panel data set of 63 energy-rich developing countries from 2000 to 2022, the study employs various econometric techniques to address heterogeneity and endogeneity. The findings reveal that EITI membership significantly reduces energy poverty, particularly regarding electricity access and clean cooking energy and technologies. However, the effect is influenced by compliance with EITI guidelines, regional characteristics, and international commodity price shocks. Effective governance plays a crucial role in moderating these effects. This research underscores the relevance of policy-enhancing transparency and governance frameworks to improve energy poverty outcomes in resource-rich nations.

1. Introduction

Energy poverty, defined as the lack of sufficient energy to improve one's life or the complete absence of energy (United Nation, 2023), is one of the most urgent issues in the modern world. Despite the critical importance of Sustainable Development Goal (SDG) 7, which aims to ensure access to clean, sustainable, and affordable energy for all, nearly 800 million people worldwide lack access to electricity, with the majority located in developing countries. Numerous studies have identified key factors for policymakers to understand and combat energy poverty. These include economic factors such as public expenditures (Nguyen and Su, 2022), trade openness (Pan et al., 2021), foreign direct investment (D'Amelio et al., 2016), and financial development (Zhang et al., 2023); social factors, which encompass women's empowerment (Tadadjeu et al., 2023), education (Apergis et al., 2022), and income inequality (Nguyen and Nasir, 2021); and institutional factors, which cover various governance variables (Imam et al., 2019; Cummins and Gillanders, 2020).

This study contributes to this literature by investigating the specific role of transparency in resource governance, focusing on the Extractive Industries Transparency Initiative (EITI) (Addison and Roe, 2024). After the 1990s, there was a growing awareness of the importance of good governance in extractive industries, with increased attention to transparency and accountability to mitigate the negative impacts of poor natural resource management. This mismanagement, especially in the oil, gas, and mining sectors, has been linked to increased poverty, conflicts, and corruption. In this context, the EITI was established in 2003, becoming the global standard for transparency and accountability in these sectors. It aims to enable governments, industry, and civil society to promote understanding of natural resource management, strengthen governance and accountability in the public sector and businesses, and provide necessary data for policy-making and dialogue (Asamoah et al., 2024; Okada and Shinkuma, 2022).

Since its inception, many empirical studies have examined the EITI's effectiveness (Sovacool et al., 2016), success (Rustad et al., 2017), and impact on various development indicators. Regarding the latter, its effect on institutions (Sovacool and Andrews, 2015; Villar and Papyrakis, 2017), environment (Kinda and Thiombiano, 2024), and financial development (Kinda and Mien, 2024; Le Billon, 2024), governance (Addison and Roe, 2024), economic growth (Pafadnam, 2024) has been highlighted. However, to our knowledge, its effect on energy poverty has not been studied.

This study represents the first empirical analysis of the impact of the EITI on energy poverty. We hypothesize that such an initiative has

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https://doi.org/10.1016/j.enpol.2024.114488
Received 23 July 2024; Received in revised form 23 December 2024; Accepted 23 December 2024

positive implications for reducing energy poverty, particularly in developing countries. The underlying mechanism is that transparency would encourage more efficient and equitable management of natural resource revenues, leading to increased use of these revenues for public investments, including energy infrastructure. Such investments are crucial for improving access to energy and reducing energy poverty. We employ a panel model covering 63 energy-rich countries observed from 2000 to 2022 to test this hypothesis. Our definition of energy-rich countries is based on those where the sum of oil, gas, mineral, and coal rents represented more than 5% of GDP for at least one year between 2000 and 2022. We then estimate our model while considering three subsidiary hypotheses. The first is that more than mere participation in the EITI is needed; its impact depends on progress in its implementation. We differentiate between countries that have undertaken necessary steps for candidacy ("EITI candidate") and those that have adhered to EITI Principles and Criteria ("EITI compliant"). The second is that the effect of the EITI is not homogeneous but sensitive to regional specificities, particularly in Sub-Saharan Africa, where energy poverty remains most acute. The third is that international shocks, such as commodity price fluctuations, may influence the effectiveness of the EITI in reducing energy poverty, as seen during the commodity price shock in 2016, which mainly affected resource-rich countries.

Overall, our results show the positive impact of the EITI on various energy poverty indicators. Thus, our contribution to the existing literature is twofold: firstly, by revisiting the theory of the natural resource curse to emphasize that the EITI provides a structural framework to mitigate the adverse effects of poor management of extractive resources, such as corruption, exacerbating energy poverty. Secondly, our empirical contribution relies on analyzing the EITI's impact on energy poverty, examining how transparency management, regional specificity, and international market shocks can shade access to clean and affordable energy for vulnerable populations.

By integrating these perspectives, our study enhances the understanding of effective strategies to achieve Sustainable Development Goals, particularly SDG 7, in a global context marked by complex socio-economic challenges. Transparent management of resource revenues can lead to better public investments, including improvements in energy infrastructure, which are essential for expanding access to energy and reducing poverty. Furthermore, this study provides valuable insights for policymakers aiming to use transparency to enhance energy access and achieve SDG 7. Understanding the impact of transparency on energy poverty can guide the implementation of more effective policies and strategies, ensuring that resource wealth translates into tangible benefits for vulnerable populations.

Following this introduction, the remainder of the article is structured as follows: Section 2 describes the study framework and transmission channels that support our hypothesis; Section 3 presents the data and empirical methodology; Section 4 discusses the results; Section 5 tests their robustness; and Section 6 concludes.

2. Background and hypotheses

Energy poverty is a major global challenge with profound impacts on developing countries. Over the last two decades, while nearly all developed countries have achieved universal access to electricity, many developing nations still lag far behind. The literature highlights several determinants of energy poverty in developing nations. Public expenditure has been shown to play a significant role, with research by Nguyen and Su (2022) indicating a U-shaped relationship, where government spending initially reduces energy poverty but can become counterproductive if spending levels surpass a certain point. Institutional quality also enhances the effectiveness of public expenditure in alleviating energy poverty. Women's empowerment has emerged as another critical factor. Tadadjeu et al. (2023) find that female parliamentarians improve electricity access across both urban and rural populations, and their influence is transmitted through channels such as anti-corruption efforts and democratic governance. Trade openness is also considered influential, though with complex dynamics. Yan et al. (2023) observe that economic complexity and financial globalization can increase energy poverty if unaccompanied by supportive trade policies. Income inequality is another determinant, with Nguyen and Nasir (2021) finding a causal relationship where higher inequality correlates with greater energy poverty. Financial development is also essential in this context; as Xie et al. (2024) argue, financial inclusion and low-carbon technology adoption are pivotal for addressing energy poverty. Education, too, has long-term effects. Makate (2024) demonstrates that increased educational attainment, particularly among women, significantly reduces the risk of energy poverty, showing the importance of human capital investment. Foreign direct investment (FDI) also impacts energy access, although studies such as those by Swart and van Noije (2024) and Nguéa et al. (2022) find that FDI may have negative short-term effects on energy access, offset by longer-term gains from private investments. Governance variables further underscore the role of policy structure in reducing energy poverty, as evidenced by Xin et al. (2024), who highlight the role of environmental governance in addressing both energy security and carbon emissions. Additionally, international sanctions, as shown by Moteng et al. (2023), can exacerbate energy poverty, reducing access to electricity and clean cooking technologies in targeted countries.

Despite these insights, most of the existing literature concentrates on economic, social, and political determinants, often overlooking the role of international organizations like the EITI in shaping energy poverty outcomes. This research gap provides a rationale for analyzing the impact of EITI membership on energy poverty in developing countries, aiming to contribute to a more comprehensive understanding of the factors affecting energy access.

This study posits that transparency, embodied by EITI initiatives, is crucial for reducing energy poverty in developing countries. Fig. 1 detailing the mechanisms through which EITI membership could influence energy poverty levels and presenting the fundamental hypotheses guiding our subsequent empirical analysis. We first hypothesize that EITI membership enhances governance in developing countries. By requiring the disclosure of payments made by extractive industries and revenues received by governments, the EITI aims to reduce corrupt practices and increase accountability (Sovacool et al., 2016; Rustad et al., 2017). However, it is important to consider the potential for reverse causality, in which countries with stronger governance structures are more likely to join the EITI, rather than EITI membership directly leading to improvements in governance. In this sense, better-governed countries may already have the institutional capacity to comply with the disclosure and reporting requirements of EITI, and their participation in EITI may not be entirely driven by the initiative's ability to improve governance. Conversely, while EITI membership has the potential to enhance governance, the initial strength of a country's governance structures may also play a significant role in their decision to adopt such initiatives.

Moreover, when citizens and stakeholders have access to reliable information about resource revenues, it creates pressure for more responsible and equitable resource management (Villar and Papyrakis, 2017; Oumarou and Saha, 2024). Transparent management reduces the risk of fund misappropriation and ensures that generated revenues are used for public benefit. This improved governance is crucial in the oil, gas, and mining sectors, where mismanaged natural resources can exacerbate poverty and conflict (Ross, 2012; Damoah, 2024).

Effective management of energy resource revenues means these funds are reinvested in projects that directly impact the well-being of populations (Ebeke et al., 2015; Mignamissi and Kuete, 2021), particularly in energy infrastructure. Increased public investments in energy infrastructure, such as electrical grids and clean cooking facilities, are essential for improving energy access (IEA, 2020). For example, Ghana has used its oil revenues to fund rural electrification projects, significantly improving energy access for vulnerable populations. The

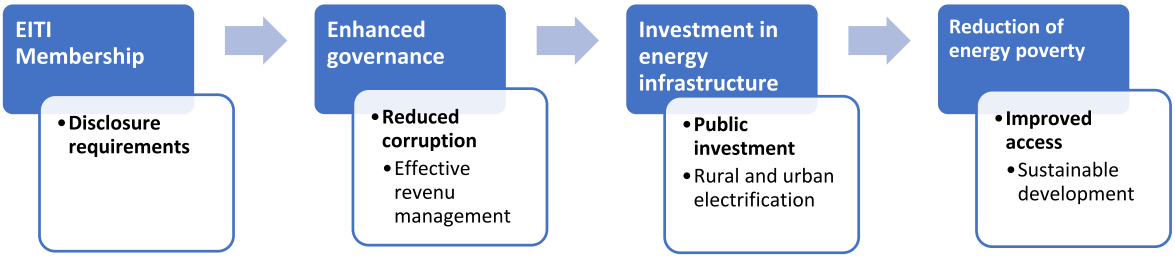

Fig. 1. Framework of EITI membership and energy poverty reduction.
Source: authors.

enhancement of energy access, enabled by sustained and effective public investments, directly contributes to reducing energy poverty. Households benefit from increased access to electricity and clean energy sources, thus improving their quality of life and economic opportunities (IEA, 2020). However, our hypothesis is nuanced by three sub-hypotheses.

H1. *Progress in Implementation of the EITI:* We also posit that mere participation in the EITI is insufficient; rather, progress in its implementation is essential. Countries that fully comply with EITI principles and criteria should demonstrate more positive results in reducing energy poverty than those that are only candidates for the EITI. These progressions are evaluated based on EITI reports in open data formats, where systematic data disclosure is encouraged. For example, according to the 2023 EITI report, resource-rich countries such as Mongolia (50%), Nigeria (44%), and Mozambique (50%) have much higher disclosure rates compared to many others, which struggle to reach even 10% of systematically disclosed data. These countries have also made progress in reducing energy poverty, with Mongolia achieving nearly 100% electricity access for its population, Nigeria increasing from 55.4% in 2019 to 60.5% in 2022, and Mozambique and the Republic of Congo making gradual improvements.

H2. *Regional Heterogeneity:* The impact of the EITI may vary by region, particularly in sub-Saharan Africa, where energy poverty is more pronounced. According to the EITI (2023) report, this region also has less data on the EITI's effectiveness in promoting open and responsible resource management (below 20% during the period 2017–2021), preventing further enlightenment of public debate and decision-making on resource management. We expect the effects of the EITI to be less marked in this region.

H3. *Influence of International Shocks:* Commodity price shocks can influence the effectiveness of the EITI in reducing energy poverty. For instance, the 2016 commodity price shock had varying effects on resource-rich countries, affecting their capacity to invest in energy infrastructure. Fluctuations in oil prices, for example, can cause government revenue volatility, making long-term project planning and implementation more challenging. Countries that have better managed these shocks often have more robust governance frameworks and better implementation of EITI transparency principles (Ross, 2012).

Thus, EITI membership and the implementation of its principles of transparency and accountability can reduce energy poverty, but this heavily depends on systematic data disclosure, specific regional conditions, the capacity to manage international commodity price shocks, and the quality of governance.

3. Data and methodology

3.1. Data

We are examining the impact of the EITI on energy poverty within an unbalanced panel of 63 energy-rich developing countries. Our study focuses specifically on hydrocarbons and mineral resources, as EITI primarily applies to these sectors. Developing countries include low-income, upper-middle-income, and lower-middle-income countries. Energy-rich countries are those where the sum of oil, gas, mineral, and coal rents accounted for more than 5% of GDP for at least one year between 2000 and 2022 (Kinda and Thiombiano, 2024). The 5% threshold for defining resource-rich countries is commonly used in the literature (Sachs and Warner, 2001; Avom et al., 2020; Mignamissi and Kuete, 2021; Kinda and Mien, 2024). This threshold is chosen for two main reasons. First, it aims to capture countries where natural resources are significant enough to potentially influence governance and development outcomes without restricting the sample to countries overly dependent on these resources. Second, as noted by Kinda and Mien (2024), since the study focuses only on extractive resources (excluding forest rents), a higher threshold, such as 10%, would have excluded too many EITI members, reducing the sample size and making it harder to have a credible counterfactual for comparison. The availability of data on energy variables, including coal rents, mineral rents, natural gas rents, and oil rents, justifies the study period from 2000 to 2022.

3.1.1. Output variable

The definition and measurement of energy poverty have evolved. Initially defined by Lewis (1982) and Boardman (1991) as the lack of access to various forms and sources of energy, this concept has been recently enriched in empirical literature by authors such as Laldjebaev and Sovacool (2015), as well as Banerjee et al. (2021). Various measures of energy poverty have been developed, among which access to electricity remains the most commonly used in the empirical literature (Nkoa et al., 2023; Pondie et al., 2024). This measure is chosen as the reference in this study. Since the global indicator of access to electricity measures the percentage of the population with access to electricity, we adjusted this indicator by calculating the difference from 100%. Thus, energy poverty represents the gap between what should be (100%) and the reality of electricity access rates, constituting our central measure of energy poverty.

3.1.2. Independent variable of interest

Our independent variable of interest is transparency, measured by commitment to the EITI. The commitment to EITI begins when a country intends to join the initiative. Once integrated, the government is considered adhesive, and the associated binary variable takes the value "1". Conversely, before this official integration or when the country is no longer a member of EITI, the variable takes the value "0". This approach aims to capture the effect of EITI membership on various aspects related to transparency in the management of extractive industries within the studied countries. This measure is used as a baseline, and other specificities of this adherence are considered in sensitivity analyses throughout the document.

3.1.3. Controls

Several variables control the effect of transparency on energy poverty. According to empirical literature, urbanization measured by the proportion of the population living in urban areas has a negative impact on energy poverty, particularly in developing countries, as found

by Song et al. (2023). Foreign Direct Investment (FDI), representing net investment flows aimed at acquiring a lasting interest in foreign enterprises, has been linked to positive effects on electricity access in Sub-Saharan Africa, according to Nguéa et al. (2022). Migrant remittances, including personal transfers and compensation of employees living abroad, have shown a negative impact on energy poverty in developing countries, as observed by Djeunankan et al. (2023). The effect of GDP growth, measured by the annual percentage growth rate of gross domestic product at constant market prices, remains uncertain due to economic fluctuations in developing countries. However, economic growth generally improves living standards and infrastructure. Finally, industrialization, assessed by the share of value added by manufacturing industries in GDP, can negatively influence energy poverty, as suggested by studies such as Lyu et al. (2023), due to high energy consumption in these sectors and potential disparities in energy infrastructure development.

3.2. Method

To estimate the impact of the EITI on energy poverty, we specify a panel model of 63 countries observed over the period 2000–2022. In the empirical literature, fixed and random effects models are often used to estimate panel data. Fixed effects models have the advantage of controlling for unobserved country-specific effects that persist over time. By incorporating these fixed effects, we obtain estimates that capture the variations in energy poverty related to transparency while minimizing potential bias introduced by time-invariant unobserved variables. Conversely, random effects models are preferred when unobserved effects vary randomly between countries. They offer additional flexibility by assuming these effects fluctuate over time, improving estimates' efficiency when country-specific characteristics are not constant. In this study, we use both fixed and random effects models as our baseline and perform the Hausman test to determine which is more appropriate given the structure of our data.

Formally, the general form of our equation is as follows:

$$EP_{i,t} = \alpha + \beta_1 EITI_{i,t} + \beta_2 Urb_{i,t} + \beta_3 Remit_{i,t} + \beta_4 FDI_{i,t} + \beta_5 Infl_{i,t} + \beta_6 GDP_{i,t} + \beta_7 Manu_{i,t} + \varepsilon_{it} \quad (1)$$

Here α is the constant, and β_1-β_7 are the parameters to be estimated, $EP_{i,t}$ represents our measure of energy poverty; $EITI_{i,t}$ determines whether the country is a member of the EITI or not; $Urb_{i,t}$ represents urbanization; $Remit_{i,t}$ refers to remittances from migrants; $FDI_{i,t}$ is foreign direct investment; $Infl_{i,t}$ is inflation; $GDP_{i,t}$ is the growth rate of the gross domestic product; $Manu_{i,t}$ refers to manufacturing; and ε_{it} is the error term specific to each country and period.

Since the fixed and random effects models might not account for the correlation between explanatory variables and self-selection, potentially leading to endogeneity issues, we implement additional robustness analyses. Specifically, we examine potential endogeneity by using instrumental variables and matching techniques to verify the robustness of the results obtained from the fixed and random effects models and the use of alternative proxies for energy poverty. Furthermore, sensitivity analyses will be conducted by modifying the model specifications and estimation methodologies to assess the robustness of the conclusions across different analytical scenarios.

4. Findings

4.1. Preliminary results

The box-and-whisker diagram compares countries' energy access before and after their involvement with the EITI (Fig. 2). The figure reveals that the average energy access for resource-rich countries during the period of EITI membership is significantly higher compared to when they were not yet members or after they left the initiative. Specifically, the average energy access increases by more than 40% when countries are members of the EITI, compared to an increase of less than 10% when they are not members or after they leave.

Table 1 presents our baseline specification results. Employing fixed and random effects models, we find evidence that commitment to the EITI significantly reduces energy poverty. The Hausman test confirms that the fixed effects model estimates are more robust. Our findings suggest that joining this initiative, which promotes transparency in managing mineral and natural resources, reduces energy poverty.

The adverse effect of EITI's commitment to energy poverty can be attributed to several factors. Enhanced transparency and accountability make countries more appealing to domestic and international investors. Better management of extractive revenues equips governments with more significant resources to invest in energy infrastructure, such as electrical grids, energy production capabilities, and expanded services to rural areas. Furthermore, data provided by the EITI enable governments to grasp financial flows and energy sector needs more comprehensively, facilitating the formulation of targeted energy policies and development strategies. By optimizing the management and allocation of revenues from extractive industries, the EITI can fund initiatives to

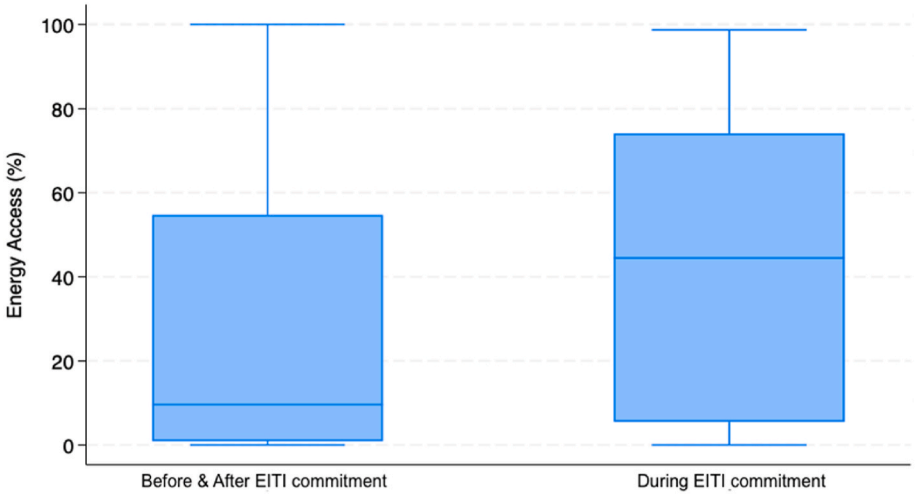

Fig. 2. Distribution of energy access by EITI period (2000–2022).
Source: Authors, using data from the IEA. "Before & After EITI Commitment" refers to the average electricity access of countries before they became involved in the EITI (before 2003) and after they left the EITI.

Table 1
Impact of EITI on energy poverty.

	Energy poverty (EP)			
	Fixed effect		Random effect	
	(1)	(2)	(3)	(4)
Commitment to EITI	**−3.4050*** **	**−1.3872***	**−3.3206*** **	**−1.2870**
	(0.7228)	**(0.7855)**	**(0.7250)**	**(0.7904)**
Personal remit.		−0.3495***		−0.3845***
		(0.1115)		(0.1106)
FDI		0.1406***		0.1448***
		(0.0530)		(0.0533)
Inflation		0.1352***		0.1344***
		(0.0277)		(0.0279)
GDP		0.1485**		0.1482**
		(0.0605)		(0.0609)
Government spending		0.3200***		0.3110***
		(0.0650)		(0.0647)
Manufacturing		−0.2519***		−0.3042***
		(0.0955)		(0.0948)
Observations	1386	997	1386	997
R-squared	0.0165	0.3752		
Countries	63	63	63	63
Hausman Test	P = 0.0001			

Notes: Standard errors in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

alleviate energy poverty, including extending electrical grids, subsidizing energy costs for impoverished households, and supporting renewable energy projects.

Additionally, adherence to the EITI prompts many resource-rich developing countries to adopt a results-oriented approach to managing their natural resources, with technical support from the organization to foster development, particularly for the population. This outcome challenges, to some extent, the resource curse theory posited by Sachs and Warner (2001), which suggests that resource wealth often leads to adverse development outcomes due to issues like corruption and mismanagement.

Regarding control variables, our analysis consistently shows that personal remittances exhibit a significant negative correlation with energy poverty across both models, indicating that higher remittances reduce energy poverty. Conversely, variables such as FDI, inflation, GDP growth, and government expenditure are positively associated with energy poverty. In contrast, manufacturing displays a significant negative relationship, implying that industrialization contributes to alleviating energy poverty.

4.2. Sensibility analysis

4.2.1. Progress in the implementation of the EITI

We first examine our initial sub-hypothesis regarding assessing progress in adhering to and implementing the EITI criteria. We argue that mere adherence to the EITI is insufficient; evaluating how effectively member countries adhere to its principles and criteria is crucial. The introduction of the validation by the EITI International Advisory Group in 2006 established a structured framework to assess whether countries have not only taken the necessary steps to become members ("EITI candidate") but also whether they adhere to the transparency and accountability requirements ("EITI compliant"). This approach distinguishes countries that have effectively integrated transparent practices in managing their extractive resources (Sovacool et al., 2016), potentially directly impacting their ability to reduce energy poverty.

The EITI candidacy phase begins when a country demonstrates a clear government commitment, develops a detailed work plan outlining its approach to meeting EITI requirements, and establishes a multi-stakeholder group that includes representatives from businesses and civil society. EITI compliance is achieved after the EITI Board validates the country's commitment to meeting these standards.

Fig. 3 illustrates that during the EITI Compliant period, countries achieve an average energy access rate of over 45%, compared to an average of 38% when they were only candidates. This indicates a noticeable improvement in energy access as countries transition from candidacy to full compliance. Full adherence to EITI standards is associated with even greater improvements in electricity access, emphasizing the role of transparency and accountability in enhancing outcomes related to energy poverty reduction.

The results in Table 2 underscore the differentiated impact of EITI candidacy and compliance on energy poverty. The findings reveal that EITI candidacy, representing a country's initial steps toward joining the initiative, yields non-significant results, as evidenced by its positive but statistically insignificant coefficients. This suggests that simply declaring an intent to adhere to EITI principles or beginning the application process does not translate into tangible reductions in energy poverty. In contrast, EITI compliance, where countries fully implement the transparency and accountability standards set by the initiative, has a robust and negative impact on energy poverty across all models. The statistically significant coefficients indicate that countries achieving compliance are more successful in mitigating energy poverty. Meaningful engagement with the EITI principles, including comprehensive implementation and validation processes, is critical in improving outcomes in the energy sector.

4.2.2. Sensitivity to sample heterogeneity

The second sensitivity test we conducted addresses the heterogeneity of our sample. Our sample comprises energy-rich developing countries spread across various regions of the world. This heterogeneity encompasses a variety of economic, political, and institutional contexts that can significantly influence how commitment to the EITI is perceived and implemented. Including both Sub-Saharan African (SSA) countries and those from other regions confronts us with distinct realities. SSA countries, for instance, often face more pronounced governance and economic development challenges despite their significant natural resource endowment (Omgba, 2009). The transparent management of these resources through the EITI could yield different impacts than other regions.

On the other hand, SSA countries often contend with more acute challenges in accessing electricity. Indeed, this region is among the most affected by a lack of access to reliable and affordable energy services (see Fig. 4). This reality could influence previously observed results regarding the impact of EITI on energy poverty. Therefore, by distinguishing the analysis between SSA and the rest of our sample, we aim to clarify whether previously observed results are broadly generalizable or disproportionately influenced by the specific characteristics of this region.

The findings in Table 3 reveal significant differences between SSA and the rest of the sample. In SSA, EITI commitment shows a marginally significant positive association with energy poverty, suggesting that while commitment to transparency initiatives like EITI might signal intent, it does not necessarily translate into improved energy outcomes in this region. The coefficients for EITI candidacy and compliance are not statistically significant, further indicating that structural or governance barriers might limit the effectiveness of EITI in addressing energy poverty in SSA. In contrast, for the rest of the sample, both EITI commitment and compliance are strongly associated with reductions in energy poverty, as evidenced by the statistically significant and negative coefficients. These results underscore the role of stronger governance and institutional frameworks outside SSA in leveraging transparency and accountability mechanisms to enhance energy access.

Among the control variables, personal remittances consistently show a significant negative association with energy poverty across regions, highlighting the role of household-level financial flows in improving access to energy. Other variables, such as government spending, inflation, GDP, and industrialization, display distinct patterns. Government

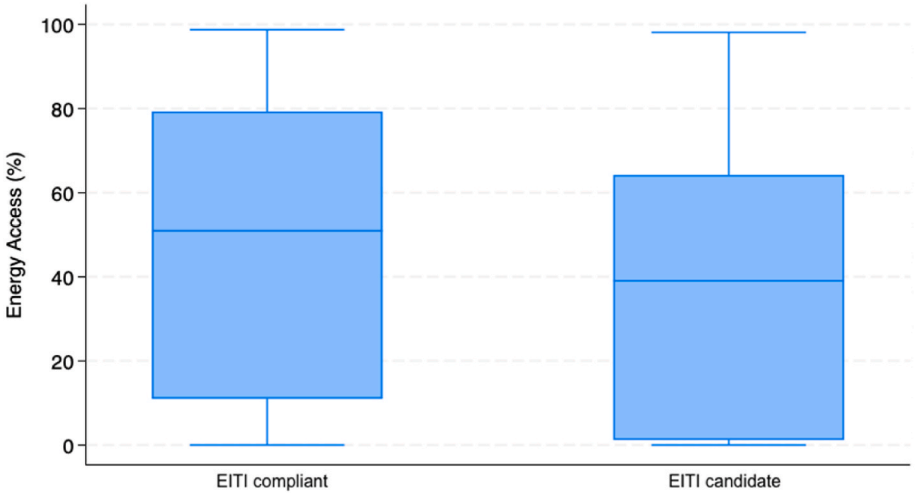

Fig. 3. Energy access rates (%) between EITI Compliant and EITI Candidate countries.
Source: Authors, using data from the IEA. "EITI Candidate" refers to the average when countries were candidates for EITI membership. "EITI Compliant" refers to the period during which countries fully adhered to the transparency and accountability requirements of the EITI.

Table 2
Other transparency measures taken into account.

Variables	Energy poverty	
	(1)	(2)
Candidacy	**1.3988**	
	(3.5183)	
Compliance		**−3.7609*** **
		(0.9171)
Personal remit.	−0.0189***	−0.2209***
	(0.0023)	(0.0965)
FDI	−0.2065	−0.0981
	(0.1998)	(0.1206)
Inflation	0.0987*	0.2091
	(0.0598)	(0.1987)
GDP	−0.2178*	−0.1463***
	(0.1111)	(0.0521)
Gov. Spending	0.1297***	0.1977***
	(0.0234)	(0.0351)
Manufacturing	−0.0945***	−0.1001***
	(0.0231)	(0.0234)
Time FE	Yes	Yes
Observations	997	997
R-squared	0.4023	0.331
Countries	63	63

Notes: Fixed effect (FE) estimates. Standard errors in parentheses, ***p < 0.01, **p < 0.05, *p < 0.

spending, for example, appears to be effective in reducing energy poverty outside SSA but shows a negative relationship in SSA, possibly reflecting inefficiencies in public expenditure. Industrialization significantly reduces energy poverty in both regions, emphasizing the importance of economic diversification.

4.2.3. Sensitivity to commodity price shock

As a third sensitivity test, we explore the impact of commodity price shocks, which often render resource-rich countries particularly vulnerable, such as those in our study. Over the past decade, countries worldwide, especially those in SSA heavily reliant on natural resources, primarily oil, were severely affected by the collapse in commodity prices (Avom et al., 2022; Malah Kuete and Asongu, 2023). Notably, oil prices plummeted by 67% between June 2014 and December 2015, alongside global economic stagnation, especially in emerging markets. These countries also grappled with internal factors like electricity shortages, droughts, political instability, and national security threats, exacerbating the adverse effects of falling commodity prices. This global backdrop may have influenced the beneficial effect of transparency on reducing energy poverty in energy-rich countries, which were likely impacted by these international conditions. To test this hypothesis, we analyze the marginal effect of the interaction between the period and our transparency measures on energy poverty.

The results synthesized in Fig. 5 demonstrate that all three transparency indicators (commitment, candidacy, and compliance) consistently had a negative effect on energy poverty. However, notably for commitment and compliance measures, the poverty-reducing effect significantly intensified after 2015 compared to the pre-2015 period. These findings confirm our hypothesis that transparent management of natural resource revenues helps countries navigate economic crises more effectively. During declining commodity prices, governments that uphold high transparency standards are better equipped to optimize revenues from these resources. This includes targeted investments in energy infrastructure, economic diversification, and prudent public financial management. Consequently, these countries can build greater resilience against external shocks and be better positioned to provide essential energy services to their populations, even in challenging economic environments.

4.3. Moderating analysis: the role of governance

Previous results indicated that transparency reduced energy poverty in energy-rich countries but was insignificant in SSA and more pronounced post-crises following the 2015 commodity price collapse. As discussed in section 2, we test whether the quality of governance, as approximated by the control of corruption, explains these mixed results.

Table 4 presents a moderation analysis examining how governance influences the relationship between transparency measures and energy poverty. The findings reveal that incorporating control of corruption significantly alters these previous mixed results. Firstly, the interaction terms between transparency measures and control of corruption are significantly negative across various samples and periods. This suggests that the beneficial impact of transparency on reducing energy poverty is amplified with control of corruption. Specifically, the negative effects of commitment, candidacy, and compliance on energy poverty are stronger in environments with better governance.

Secondly, in SSA, the interaction between commitment and control of corruption shows a significant negative effect, indicating that even in countries where transparency alone was previously ineffective, combining it with substantial corruption control enhances its impact. Similarly, the post-2015 period shows more pronounced negative effects

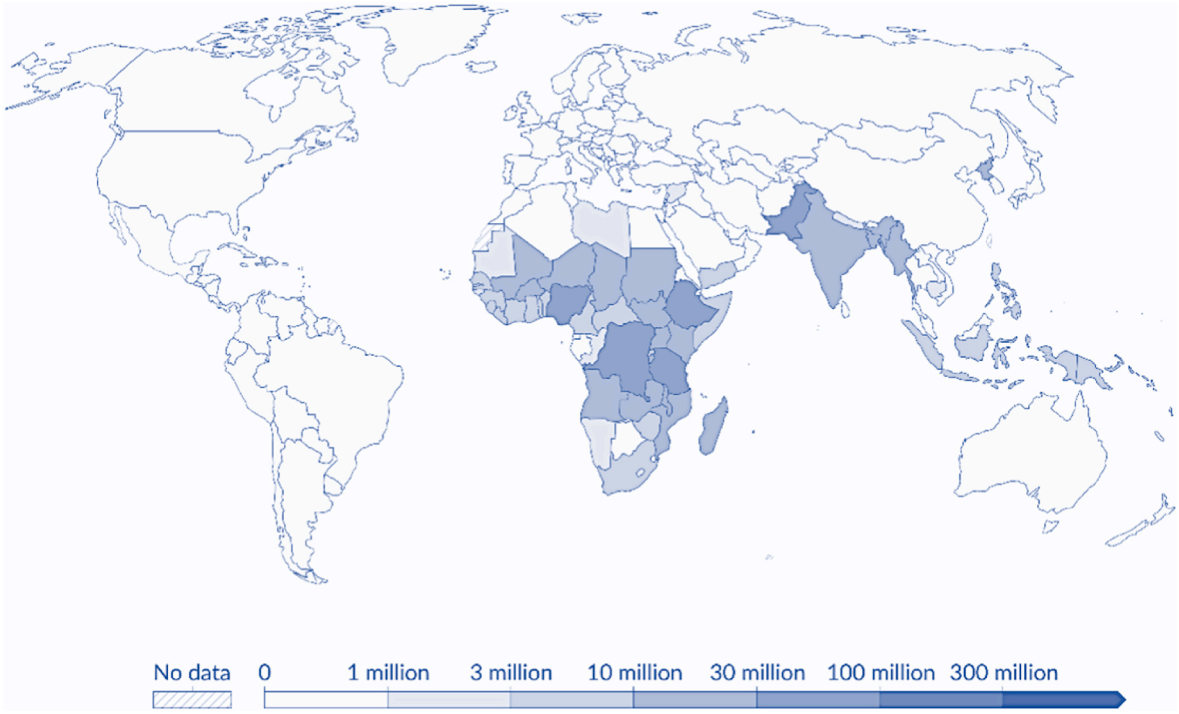

Fig. 4. Mapping of electricity access worldwide.
Source: World in Data (2022).

Table 3
Sensitivity by region.

	SSA			Rest of sample		
	1	2	3	4	5	6
Commitment	**6.6971***			**−3.0347*****		
	(3.5937)			**(1.0303)**		
Candidacy		**4.5607**			**−0.9082**	
		(4.2173)			**(1.4661)**	
Compliance			**1.0962**			**−4.1922*****
			(1.2302)			**(1.0566)**
Personal remit.	−0.5973	−0.6963	−0.6530	−0.3439***	−0.3481***	−0.3509***
	(0.4385)	(0.4404)	(0.4363)	(0.0858)	(0.0859)	(0.0856)
FDI	−0.2274	−0.2350	−0.2394	−0.0355	−0.0499	−0.0299
	(0.2324)	(0.2328)	(0.2320)	(0.0999)	(0.0996)	(0.0996)
Inflation	−0.0877	−0.1075	−0.0906	−0.1899***	−0.1923***	−0.1939***
	(0.1056)	(0.1052)	(0.1051)	(0.0643)	(0.0645)	(0.0642)
GDP	−0.8642***	−0.8244**	−0.8489**	−0.0581	−0.0832	−0.0478
	(0.3310)	(0.3319)	(0.3302)	(0.1381)	(0.1374)	(0.1376)
Gov. Spending	−1.2455***	−1.3020***	−1.2050***	0.4956***	0.4851***	0.5016***
	(0.2142)	(0.2092)	(0.2170)	(0.0534)	(0.0530)	(0.0533)
Manufacturing	−1.0458***	−0.9997***	−1.0321***	−0.6027***	−0.5774***	−0.6106***
	(0.2574)	(0.2573)	(0.2562)	(0.0790)	(0.0774)	(0.0781)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	363	363	363	634	634	634
Countries	19	19	19	44	44	44

Notes: Fixed effect (FE) estimates. Standard errors in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

compared to the before-2015 period, highlighting that transparency coupled with good governance becomes even more beneficial during economic downturns.

These findings suggest that good governance, as approximated by control of corruption, is crucial for realizing the full benefits of transparency measures in reducing energy poverty. It indicates that resource-rich countries with strong institutions are better equipped to use transparency initiatives effectively, enhancing resilience to external shocks and ensuring sustained energy access for their populations. This comprehensive approach of integrating transparency with robust governance practices can address the previous mixed results, providing a more effective strategy for combating energy poverty in varying contexts.

5. Robustness analysis

In this section, we test the robustness of our results by controlling for potential sources of endogeneity that previous fixed effects regressions may not have addressed. First, measurement errors in empirical literature may occur when the variables used do not perfectly capture the phenomena they are supposed to measure. This issue is particularly pertinent in studies conducted in developing countries where statistical

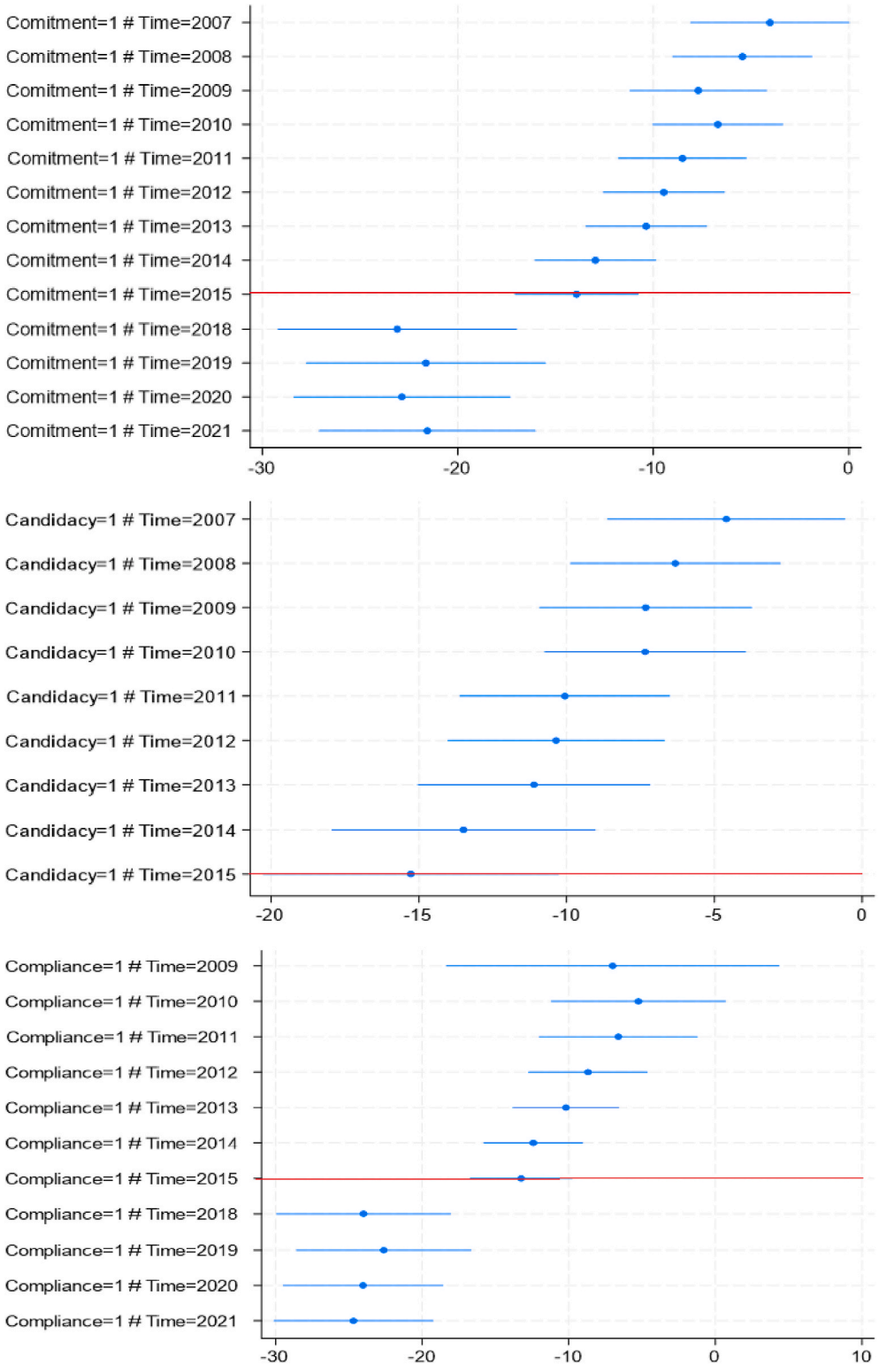

Fig. 5. Effects of transparency on energy poverty: Comparative Marginals Before and After 2015.
Source: authors.

capacity is often low, and measurements may not accurately reflect realities. To mitigate this, we use an alternative proxy for energy poverty: lack of access to clean energy for cooking and technologies. This measure captures energy poverty as the absence of access to clean and modern energy sources for cooking reflects broader limitations in energy access (United Nation, 2023). Since these variable captures access rather than lack of access, as with our first measure based on electricity access, we recode it by subtracting the percentage of access from 100 to obtain the percentage of the population without access to clean energy, which becomes our second measure of energy poverty.

Second, we address the potential issue of reverse causality between energy poverty and transparency. While adherence to the EITI can

Table 4
Moderation analysis: Accounting for governance measured by control of corruption.

VARIABLES	SSA			Rest of Sample			Before 2015			After 2015			Global Sample			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Commitment	**−10.2311****			**−17.0455*****			**−6.0544***			**−13.0566*****			**−12.2078*****			
	(5.2199)			**(4.0451)**			**(3.6917)**			**(4.6998)**			**(1.0554)**			
Candidacy		**−7.0221**			**−4.2034**			**−3.0233*****			**−4.6045*****			**−3.9912**		
		(5.1087)			**(5.2105)**			**(0.1229)**			**(1.1156)**			**(3.0112)**		
Compliance			**−15.0111*****			**−17.0677*****			**−10.0087*****			**−13.0553*****			**−20.812*****	
			(4.6557)			**(3.0531)**			**(4.3211)**			**(4.0331)**			**(7.0978)**	
EITI																**−5.2311*****
																(2.1761)
Control of Corruption	−4.123***	−2.9582***	−1.9013***	−2.9032***	−1.3331***	−3.2067***	−2.0034***	−1.9904***	−1.0754***	−3.5123***	−5.1256***	−2.9832***	−2.4598***	−1.6793***	−1.9954***	−1.2397***
	(0.0876)	(0.0985)	(0.0871)	(0.0341)	(0.0554)	(0.1065)	(0.0907)	(0.0885)	(0.0324)	(0.1098)	(0.890)	(0.5780)	(0.2045)	(0.6076)	(0.5077)	(0.0519)
Commitment* Control of Corruption	−1.5098***			−3.877***			−0.3449***			−1.2667***			−1.8776***			
	(0.4001)			(0.4977)			(0.1119)			(0.4553)			(0.4788)			
Candidacy* Control of Corruption		−1.5407***			−0.4998			−0.8945***			−1.7909***			−0.8896*		
		(0.3312)			(0.2341)			(0.3009)			(0.6689)			(0.5424)		
Compliance* Control of Corruption			−1.8045**			−6.7011***			−0.9877***			−3.0608***			−2.5441***	
			(0.5771)			(0.9889)			(0.3441)			(0.8856)			(0.8077)	
EITI*Control of corruption																−1.8099***
																(0.3667)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	495	495	495	818	818	818	935	935	935	378	378	378	1313	1313	1313	1313
R-squared	0.2312	0.5602	0.4567	0.4066	0.2056	0.1894	0.4001	0.4065	0.4111	0.3657	0.4120	0.2387	0.3145	0.3551	0.3412	0.2455

Notes: Fixed effect (FE) estimates. The EITI variable consolidates all membership stages into a single indicator, categorized as follows: 0 = non-member, 1 = commitment stage, 2 = candidate stage, and 3 = compliance stage. Fixed effect estimates. Standard errors in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

reduce energy poverty, as demonstrated, the lack of access to electricity or clean energy may drive governments to join the EITI to improve governance and enhance the well-being of their populations. To account for this, we employ an instrumental method based on Blundell and Bond's (1998) two-step dynamic system-generalized method of moments (System-GMM). The lagged differences of the dependent variable are used as instruments, and the Hansen test is used to check their validity.

Third, omitted variable bias is a common source of endogeneity in econometric models. One effective method to limit this bias is to add control variables to our regressors. We control for corruption in addition to the variables specified in the base model (Equation (1)). This factor is important in the relationship between transparency and energy poverty, as discussed in subsection 4.3.

Finally, selection bias can also be a source of endogeneity in our analysis if countries that choose to implement the EITI have unobserved or uncontrolled characteristics that influence both their decision to join the EITI and their energy poverty outcomes. For instance, countries with higher levels of transparency and good governance may be more likely to adopt the EITI, and these same characteristics could also positively influence their performance in reducing energy poverty. To mitigate this issue, we use the propensity score matching (PSM) method. Formally, the PSM method compares countries that have adopted the EITI with those that have not, ensuring they share similar observable characteristics. This comparison aims to attribute differences in energy poverty outcomes to EITI membership. It is crucial that these two groups are as comparable as possible before implementing EITI to ensure that any observed effects can be confidently linked to EITI adoption. If the decision to adopt EITI were random, determining the average treatment effect on treated countries (ATT) would be straightforward by comparing the sample mean of the treatment group (EITI) with that of the control group (non-EITI). However, this could introduce selection bias. To address this, Heckman et al. (1998) propose estimating the ATT under the assumption that the mean level of the control group is independent of the decision to adopt EITI but conditional on observed characteristics (Xi). Rosenbaum and Rubin (1983) suggest using a propensity score to summarize these characteristics. The propensity score, denoting the probability of receiving the treatment, matches treated and control groups based on pre-existing observed covariates (P(Xi)). The ATT is thus obtained as follows:

$$ATT = E[Y_{i1}|T_i = 1, P(X_i)\ ] - E[Y_{i0}|T_i = 0, P(X_i)] \quad (2)$$

The propensity score is estimated using a logit model. Kernel Density Matching is employed to estimate the probability density functions of propensity scores for treated and untreated individuals (Caliendo and Kopeinig, 2008). Finally, diagnostic tests are conducted to assess the quality of the matching.

The results of the first three robustness analyses are summarized in Table 5. Overall, even with a change in econometric technique and the use of an alternative proxy for energy poverty, our findings consistently highlight a significant and reducing effect of transparency on energy poverty. The impact appears slightly more pronounced in reducing energy poverty related to access to electricity compared to access to clean energy for cooking. Furthermore, we observe a shift in the significance of the Candidacy effect when we incorporate control of corruption into our analysis. While this factor was not statistically significant in previous specifications, it becomes significant in this new specification. This underscores that the presence and level of corruption control can amplify the impact of transparency on reducing energy poverty. As previously established, corruption acts as a crucial mediator in this relationship, influencing how government transparency translates into tangible outcomes for the population. Moreover, the effect of Compliance remains more pronounced than that of Candidacy. This reinforces the importance of policies and practices adhering to international transparency standards in managing energy resources and their impact on the energy well-being of populations in the studied countries.

The results from Table 6, using Propensity Score Matching (kernel matching), further reinforce the robustness of our findings regarding the

Table 5
Robustness using alternative measures of energy poverty and the two-step GMM method.

	EP1			EP2		
	(1)	(2)	(3)	(4)	(5)	(6)
Lag EP1	−0.0932***	−0.0896***	−0.1121***			
	(0.0143)	(0.0119)	(0.0147)			
Lag EP2				−0.0588***	−0.1943**	−0.1770**
				(0.0149)	(0.0787)	(0.0711)
Commitment	**−0.6882*** **			**−0.3110*** **		
	(0.2065)			**(0.1053)**		
Candidacy		**−0.3241*** **			**−0.1207*** **	
		(0.0944)			**(0.0455)**	
Compliance			**−1.0231*** **			**−0.2571***
			(0.2441)			**(0.1558)**
Personal remittances	−0.6403***	−0.6613***	−0.7096***	−1.1080***	−1.2320***	−1.0611***
	(0.0972)	(0.0809)	(0.0974)	(0.0520)	(0.0583)	(0.1160)
FDI	−0.2286	−0.2072*	−0.1794*	−0.5205***	−0.4997***	−0.5210***
	(0.1445)	(0.1184)	(0.1054)	(0.1284)	(0.1389)	(0.1183)
Inflation	0.0862	0.0891	0.0606	−0.0466	−0.0492	−0.0075
	(0.1025)	(0.0873)	(0.0762)	(0.1368)	(0.1174)	(0.1084)
GDP	0.1070	0.2749	0.2466	1.4084***	1.6467***	1.4324***
	(0.2343)	(0.2177)	(0.2340)	(0.3110)	(0.3030)	(0.3572)
Government spending	−0.6590***	−0.6454***	−0.6322***	−0.2617***	−0.2454***	−0.2485***
	(0.0479)	(0.0688)	(0.0596)	(0.0414)	(0.0549)	(0.0425)
Manufacturing	−1.8886***	−1.9638***	−2.0708***	−1.8707***	−2.0402***	−1.9523***
	(0.1892)	(0.1032)	(0.1000)	(0.1194)	(0.0819)	(0.1426)
Control of corruption	−1.3307***	−1.2985***	−1.2349***	−0.7044***	−0.4699**	−1.0074***
	(0.2434)	(0.2404)	(0.3436)	(0.2134)	(0.2149)	(0.2828)
Observations	940	940	940	940	940	940
Country	63	63	63	63	63	63
AR (1)	0.0012	0.0087	0.0077	0.0001	0.0002	0.0001
AR (2)	0.1332	0.1641	0.1590	0.1050	0.1245	0.1082
Instrument	29	29	29	33	33	33
Hansen	0.348	0.363	0.387	0.209	0.143	0.317

Notes: EP1 = non-access to electricity, and EP2=Non access to clean energy for cooking. Standard errors in parentheses, ***p < 0.01, **p < 0.05, *p < 0.

Table 6
Propensity Score Matching (kernel matching).

	Energy poverty (electricity)			Energy poverty (clean fuel)		
ATT Commitment	**−6.897***			**−13.517*****		
	(3.706)			**(3.682)**		
ATT Candidacy		**4.695**			**−5.193**	
		(4.448)			**(4.901)**	
ATT Compliance			**−15.981*****			**−19.791*****
			(4.295)			**(4.405)**
Treated	207	100	122	207	100	122
Control	929	1036	1014	923	1030	1008
Bandwidth	0.006	0.011	0.001	0.001	0.011	0.001

Notes: Fixed effect estimates. Standard errors in parentheses, ***p < 0.01, **p < 0.05, *p < 0. Bootstrap replications = 500. The propensity score is estimated using a logit model with covariates including GDP growth, manufacturing value-added, control of corruption, FDI, and rents from energy resources.

impact of EITI membership on reducing energy poverty. Specifically, the ATT estimates indicate that countries committed to EITI exhibit a statistically significant reduction in energy poverty related to clean fuel access of −13.5% of the population. Similarly, countries in compliance with EITI standards show a significant decrease in both electricity-related energy poverty by 15.9% of the population and clean fuel-related energy poverty by 19.7% of the population. These results confirm the pronounced effect of full compliance with EITI on reducing energy poverty. Additionally, the ATT for countries in the candidacy phase does not yield statistically significant results, suggesting that the benefits of EITI membership on energy poverty may be more substantial upon achieving full compliance.

6. Conclusion and policy implications

This study investigated the impact of transparency initiatives, specifically the Extractive Industries Transparency Initiative, on energy poverty in developing countries. Our analysis consistently demonstrated a significant and positive relationship between transparency and reducing energy poverty by utilizing panel data from a diverse set of energy-rich developing countries and employing robust econometric techniques. Notably, compliance with EITI standards was a more effective predictor of energy poverty reduction than mere candidacy status. Furthermore, our findings highlighted the critical role of control of corruption measures in enhancing the benefits of transparency efforts, particularly in sub-Saharan Africa and during periods of economic volatility.

Based on these results, several actionable policy recommendations emerge. First, governments should commit to implementing EITI standards by setting clear, enforceable deadlines and allocating resources to support this transition. This includes establishing a national EITI implementation plan with specific milestones and performance indicators. Countries can adopt a phased approach, with initial steps involving improving data transparency and later phases focusing on comprehensive revenue reporting and public engagement. Governments should also create or strengthen independent bodies overseeing EITI compliance and addressing shortcomings.

Additionally, policymakers should develop and enforce comprehensive control frameworks to bolster corruption control efforts. This could involve establishing dedicated units within ministries responsible for natural resources, implementing robust whistleblower protection laws, and utilizing technologies such as blockchain to enhance the transparency of financial transactions. Regular training programs for officials on controlling corruption practices and conducting frequent audits can also be effective measures.

Regional specificity is also crucial. Policymakers should design and implement tailored transparency strategies that address local challenges and leverage regional strengths. For example, in sub-Saharan Africa, where energy poverty is particularly severe, creating local oversight committees composed of community leaders and civil society representatives can ensure that resource revenues are effectively used for local energy projects. Providing these committees with training and resources to perform their duties can enhance their effectiveness.

Maintaining the momentum of transparency initiatives during periods of economic instability is vital. Governments should establish contingency plans, including seeking international financial assistance and technical support. Engaging with global organizations to secure temporary funding or support and developing partnerships with donor agencies to implement emergency transparency measures can help sustain progress. Additionally, creating flexible frameworks that adjust transparency practices in response to economic conditions can help maintain their effectiveness.

Finally, while our findings provide valuable insights, we recognize certain limitations of this study and propose avenues for future research. One limitation is the definition of resource-rich countries, based on the threshold of natural resource rents exceeding 5% of GDP. Future research could explore alternative criteria for identifying resource-rich countries, such as those where the share of energy exports in total exports is particularly high or countries with significant production in key resources. Additionally, future studies could explore the indirect effects of transparency initiatives on broader development outcomes, such as promoting social equity in energy access and advancing environmental sustainability.

CRediT authorship contribution statement

Yselle Malah-Kuete: Writing – review & editing, Writing – original draft, Supervision, Formal analysis, Conceptualization. **Thierry Messie-Pondie:** Writing – original draft, Software, Methodology, Data curation, Conceptualization.

Declaration of competing interest

The authors declare no competing interests related to this study.

Acknowledgment

We sincerely thank the anonymous reviewers for their insightful comments and suggestions, which have significantly improved the quality of this manuscript. However, we take full responsibility for any remaining errors or shortcomings.

Appendices.

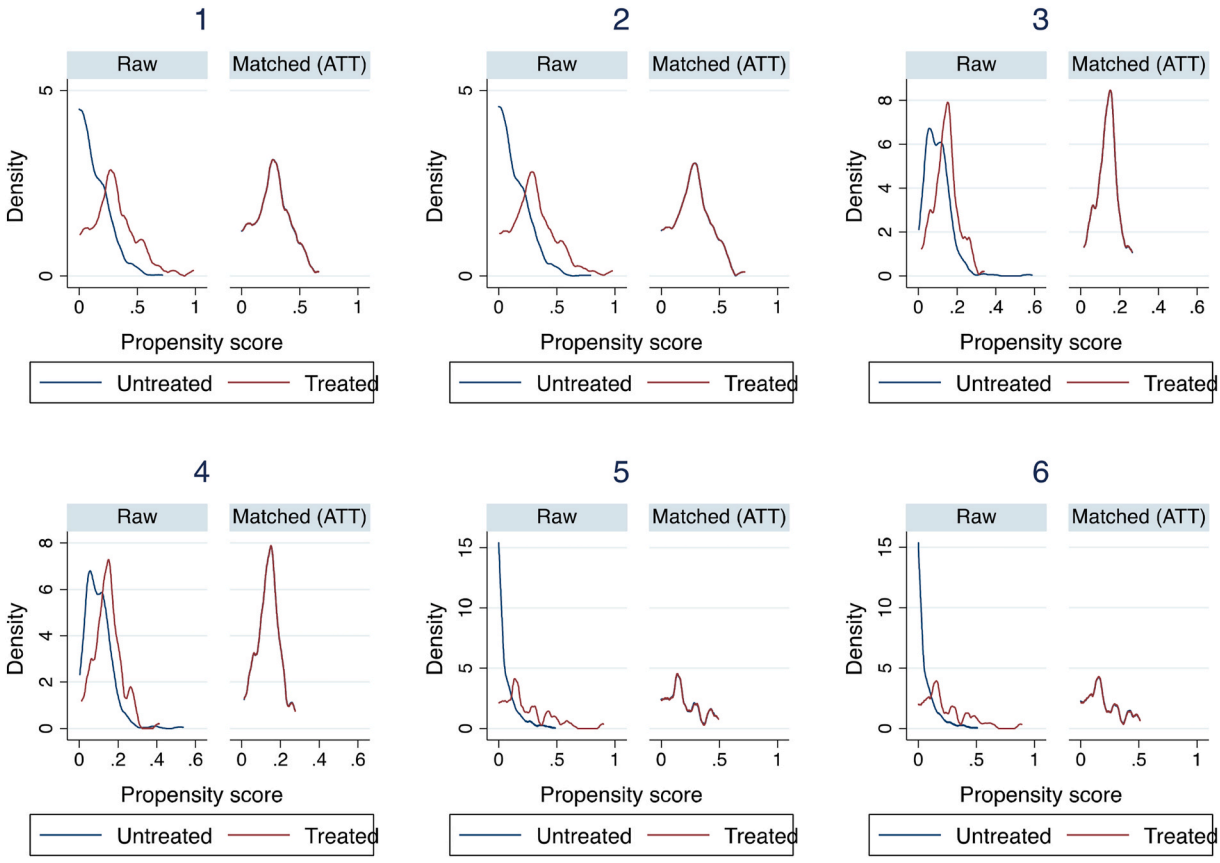

Fig. A1. Common support before and after the matching
Source: authors. **Note**: 1, 3, and 5 represent the ATT on energy poverty in terms of electricity for Commitment, Candidacy, and Compliance, respectively; 2, 4, and 6 represent the ATT on energy poverty in terms of access to clean energy.

Table A1
Correlation matrix

	EP1	Cot	Cand	Compl	Remit	FDI	Inf	GDP	GE	Manu	CC
EP1	1.00										
Commitment	−0.20	1.00									
Candidacy	−0.23	0.75	1.00								
Compliance	−0.06	0.65	0.05	1.00							
Remit	−0.16	0.02	0.00	0.03	1.00						
FDI	0.05	0.10	0.07	0.05	−0.02	1.00					
Inf	−0.04	−0.03	0.02	−0.07	−0.03	0.03	1.00				
GDP	0.05	0.10	0.07	0.09	0.07	0.15	0.06	1.00			
GE	0.06	0.09	0.01	0.13	0.05	−0.07	−0.09	−0.03	1.00		
Manu	−0.38	−0.22	−0.11	−0.21	−0.08	−0.10	0.06	−0.03	−0.30	1.00	
CC	0.09	0.06	0.10	−0.02	−0.04	0.11	0.02	0.25	0.02	−0.03	1
	EPclean	Cot	Cand	Compl	Remit	FDI	Inf	GDP	GNE	Manu	CC
EP2	1.00										
Commitment	−0.27	1.00									
Candidacy	−0.23	0.75	1.00								
Compliance	−0.15	0.65	0.05	1.00							
Remit	−0.09	0.02	0.00	0.03	1.00						
FDI	0.04	0.10	0.07	0.05	−0.02	1.00					
Inf	−0.04	−0.03	0.02	−0.07	−0.03	0.03	1.00				
GDP	0.13	0.10	0.07	0.09	0.07	0.15	0.06	1.00			
GE	0.08	0.09	0.01	0.13	0.05	−0.07	−0.09	−0.03	1.00		
Manu	−0.34	−0.22	−0.11	−0.21	−0.08	−0.10	0.06	−0.03	−0.30	1.00	
CC	0.13	0.06	0.10	−0.02	−0.04	0.11	0.02	0.25	0.02	−0.03	1.00

Note: Cot = Commitment; Cand = Candidacy; Compl = Compliance; CC = control of corruption; GE = General government final consumption expenditure.

Table A2
Descriptive statistics and sources

Variables	Definition and Measure	Data source
EITI	Set of three variables: Commitement, Candidacy and Compliance	Construction of authors
Commitment	Countries committed to the EITI transparency program (measured by 0 and 1)	EITI
Candidacy	Countries wishing to join the EITI (measured by 0 and 1)	EITI
Compliance	Countries complying with EITI rules (measured by 0 and 1)	EITI
Energy poverty (EP1)	Difference between 100% and the percentage of the population with access to electricity	IEA
Energy poverty (EP2)	Difference between 100% and the percentage of the population with access to clean energy for cooking	IEA
Personal remittances	Personal remittances, received (% of GDP)	WDI
FDI	Foreign direct investment, net inflows (% of GDP)	WDI
Gov. Spending	General government final consumption expenditure (annual % growth)	WDI
GDP	GDP growth (annual %)	WDI
Inflation	Inflation, GDP deflator (annual %)	WDI
Industry	Industry (including construction), value added (annual % growth)	WDI
Control of Corruption	Control of Corruption captures perceptions of the extent to which public power is exercised for private gain.	WGI

Note: EP = energy poverty, IEA= International Energy Agency, WDI= World Development Indicators, WGI= World Governance Indicators, EITI = Extractive Industries Transparency Initiative.

Table A3
List of countries included and their EITI Status.

EITI-members	Commitment	multi-stakeholder group (MSG)	Candidate	First Report	Validation of Report	Compliant	Suspended	Status Feb. 2023
Algeria	No	No	No	No	No	No	No	Non-EITI Members
Angola	2022		2022					Candidate
Argentina	2017	2018	2019			2022		Committed
Armenia	2017		2017			2022		Compliant
Azerbaijan	2007		2016				2017	Suspended
Belize	No	No	No	No	No	No	No	Non-EITI Members
Bolivia	No	No	No	No	No	No	No	Non-EITI Members
Botswana	No	No	No	No	No	No	No	Non-EITI Members
Brazil	No	No	No	No	No	No	No	Non-EITI Members
Burkina Faso	2007	2008	2009	2011	2011	2023		Compliant
Cabo Verde	No	No	No	No	No	No	No	
Cameroon	2005	2005	2007	2006	2010	2022		Compliant
Chad	2007	2010	2010	2012	2013	2022		Compliant
China	No	No	No	No	No	No	No	Non-EITI Members
Colombia	2013	2014	2014		2018	2022		Candidate
Congo, Dem, Rep	2005	2005	2007	2009	2010	2015		
Congo, Rep	2004	2006	2007	2008	2010	2013		Compliant
Cuba	No	No	No	No	No	No	No	Non-EITI Members
Ecuador			2020					Candidate
Egypt	No	No	No	No	No	No	No	Non-EITI Members
Equatorial Guinea	2008						2010	Suspended
Gabon	2004	2005	2007	2007	2008	2010	2013	Suspended
Ghana	2003	2005	2007	2007	2010	2010		Compliant
Guinea	2005	2005	2007	2007	2012	2014	2013	Compliant
India	No	No	No	No	No	No	No	Non-EITI Members
Indonesia	2008	2010	2010	2013	2013	2015		Compliant
Iran	No	No	No	No	No	No	No	Non-EITI Members
Iraq	2009	2010	2010	2011	2012	2012		Compliant
Jordan	No	No	No	No	No	No	No	Non-EITI Members
Kazakhstan	June-05	Apr-05	39,326	39,387	Aug-10	41,548		Compliant
Kyrgyzstan	2004	2008	2007	2009	2010	2011		Compliant
Lao PDR	No	No	No	No	No	No	No	Non-EITI Members
Liberia	2007	2007	2008	2009	2009	2015		Candidate
Libya	No	No	No	No	No	No	No	Non-EITI Members
Madagascar	2007	2008	2008	2011	2011			Candidate
Malawi	2014	2015	2015			2016		Candidate
Mali	2006	2007	2007	2009	2010	2011		Compliant
Mauritania	2005	2006	2007	2007	2010	2012	2013	Compliant
Mexico	2015	2017	2018	2019				Candidate
Mongolia	2006	2006	2007	2007	2010	2010		Compliant
Morocco	No	No	No	No	No	No	No	
Mozambique	2008	2009	2009	2011	2011	2015		Compliant
Myanmar	2012	2014	2014	2015		2015		Suspended
Namibia	No	No	No	No	No	No	No	
Nigeria	2003	2003	2007	2006	2010	2011		Compliant
Papua New Guinea	2013	2013	2014	2016				Candidate
Peru	2005	2006	2007	2009	2010	2012		Compliant
Russian Federation	No	No	No	No	No	No	No	Non-EITI Members
Solomon Islands	2012						2016	Suspended
South Africa	No	No	No	No	No	No	No	Non-EITI Members
South Sudan	No	No	No	No	No	No	No	Non-EITI Members
Sudan	No	No	No	No	No	No	No	Non-EITI Members

(*continued on next page*)

Table A3 (*continued*)

EITI-members	Commitment	multi-stakeholder group (MSG)	Candidate	First Report	Validation of Report	Compliant	Suspended	Status Feb. 2023
Suriname	2016	2017	2018					Committed
Syrian	No	No	No	No	No	No	No	Non-EITI Members
Tajikistan	2012	2012	2013	2015				Candidate
Timor-Leste	2007	2007	2008	2009	2010	2010		Compliant
Togo	2009	2010	2010	2012	2013	2022		Compliant
Tunisia	No	No	No	No	No	No	No	Non-EITI Members
Turkmenistan	No	No	No	No	No	No	No	Non-EITI Members
Uganda	No	No	No	No	No	No	No	
Ukraine	2009	2012	2013	2015		2015		Candidate

Source: authors calculations based on EITI (2023).

Data availability

Data will be made available on request.

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