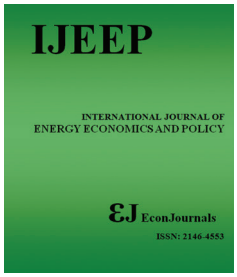

International Journal of Energy Economics and Policy

ISSN: 2146-4553

available at http: www.econjournals.com

International Journal of Energy Economics and Policy, 2021, 11(3), 388-394.

Energy Consumption, Governance Quality and Sustainable Development Nexus: Empirical Evidence from MENA Countries

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Received: 30 December 2020 **Accepted:** 01 March 2021 **DOI:** https://doi.org/10.32479/ijeep.11259

ABSTRACT

The objective of this paper is to empirically examine whether energy consumption and governance quality affect sustainable development in 17 Middle East and North Africa (MENA) countries over the period 1984-2018 using a simultaneous equation model (SEM). Empirical results provide evidence that control of corruption and the institutional or governance quality of are complementary and essential for energy consumption to have an indirect positive impact on sustainable development. The results also show that sustainable development reacts negatively to energy consumption because the poor governance quality in MENA countries. These empirical insights are of particular interest to policymakers to improve the governance quality and implement sound economic policies to support economic development.

Keywords: Governance Quality, Energy Consumption, Economic Growth, Simultaneous Equation Model
JEL Classifications: H11, Q01, Q43, C30

1. INTRODUCTION

Achievement of the Sustainable Development Goals (SDGs) varies considerably across countries in the Middle East and North Africa (MENA). Certain problems in the region such as conflicts in some MENA countries have not allowed remarkable progress in terms of the Sustainable Development Goals (SDGs), in particular for poverty reduction and in terms of peace, justice and institution building (Cuaresma et al., 2019). MENA countries face major challenges in achieving sustainable development goals, due to stunting and sustainable use of energy resources. Access to infrastructure, which is mainly covered by the affordable and clean energy goal, has improved rapidly. On the other hand, the high carbon dioxide (CO_2) emissions contained in fossil fuel exports have a negative effect and slow down the achievement of the climate action target IEA (2019). However, further efforts should be made to tackle the higher levels of corruption perceived under the 16th Sustainable Development Goal (SDG) (Peace, Justice and Strong Institutions) (Transparency International, 2020).

Achieving this goal will allow the transition to more circular and green economies. But such a goal of sustainable development is not easy to achieve, as governance and the quality of public services are major challenges in the MENA countries (Sachs et al., 2019). According to the indicators of governance in the world which are determined by the World Bank in 2016, the region has achieved poor results in terms of corruption control and government efficiency (Praia City Group, 2020). As a result, public services are inefficient, and there is a decline in trust in public authorities. In the Middle East and North Africa (MENA), citizens aspire to achieve the goals of sustainable development through greater influence over government decisions (Sachs et al., 2019). This could also be achieved through a more efficient and responsive public sector and through the eradication of corruption. On the other hand, tackling them through initiatives promoting sustainable and inclusive governance and development represents a global public good that could defuse problems and contribute to the achievement of peace and stability (OECD, 2020). By examining the relationship between corruption, oil rents and state stability,

López and Mitra (2000) concluded that an increase in oil rents significantly increases the level of corruption.

Several studies have shown that corruption raises a set of challenges. Some economists have opted for the analysis of the effects of corruption. This has led to the emergence of several currents in the literature relating to corruption. Most traditional economic research has tended to determine the direct effect of corruption on certain macroeconomic variables. Some researchers such as Svensson (2005) have focused on the impact of corruption on economic growth. Thus, corruption and other governance quality are taken into account in the literature as being factors that could affect the overall factor productivity of the country. Referring to López and Mitra (2000), actual and polluting emissions are significantly higher than levels which are socially optimal in relation to per capita GDP. This reflects ineffectiveness of public authorities due to government decisions. Indeed, it has been noticed that when the degree of corruption is higher, the difference of polluting emissions compared to the social optimum will also be greater. According to Sachs et al. (2019), the impact of financial liberalization on environmental policy remains dependent on the degree of corruption. A higher level of corruption normally results in a greater impact of trade liberalization on the quality of the environment. The impact of corruption on the quality of the environment materializes through indirect effects on natural resources. Indeed, Wendling et al. (2018) have shown that the decisions taken by public authorities for the use of natural resources are strongly influenced by major lobbies which defend their personal interests.

While, the most empirical works analyze the direct impact of corruption on the degree of pollution (Ahmad et al., 2020), the investigation of the indirect effects of corruption on sustainable development through the channel of energy consumption are very limited or even non-existent (Cole, 2007). In this paper, we attempt to examine the effects of corruption on sustainable development taking into account the close relationship between environmental degradation and energy consumption. The analytical framework that we have adopted in this work incorporates an approach that is developed by Eren et al. (2019). In this regard, we have decomposed the effects of corruption in our model into direct effects and indirect effects. Corruption could have a direct impact on the quality of the environment through tax laws and regulations. However, corruption affects sustainable development through its effect on the quality of the environment and therefore on economic growth. In fact, corruption could negatively impact economic growth; because any increase in the degree of corruption lead to a significant drop in the GDP growth rate. In turn, this drop in GDP could affect the quality of the environment by resorting to the theory of the Kuznets curve (Goh and Ang, 2018).

The main objective in this paper is to examine the effect of corruption on sustainable development through the effect on energy consumption for a panel of 17 MENA countries for the period 1984-2018, using a simultaneous equations model. Our contribution is to explore (i) the direct interdependent relationships between the control of corruption and economic growth, degradation of environmental quality and energy consumption, and (ii) the indirect relationship between corruption and sustainable development through the mediating effect of energy consumption.

The rest of the paper is organized as follows. Section 2 presents an overview of the literature review on the subject area. Section 3 describes the data and methodology used. Section 4 interprets the empirical results. Section 5 concludes and draws some policy recommendations.

2. LITERATURE REVIEW

2.1. Relationship between Corruption and Sustainable Development

More recent literature has demonstrated the multiple economic and environmental implications of controlling corruption (Wendling et al., 2018). However, the empirical studies have yielded mixed results (Halliru et al., 2020). Some authors have found that corruption has a negative impact on the quality of the environment. Corruption could lead to dysfunctional governance systems in a country (Raza and Shah, 2018). This could contribute to the disappearance of species, the misuse of natural resources, pollution and environmental degradation and the spread of invasive diseases (Wiebe et al., 2018). In fact, corruption leads to social under-optimization of environmental governance. Thus, Wendling et al. (2018) showed that this could be done by restraining environmental regulations through corrupt decisions. In a context of corruption, some actors pay the biggest bribes at the expense of optimal results (Fredriksson et al., 2004). However, tougher and more stringent environmental policies appear in a context of weaker corruption. Some other empirical work has shown that corruption affects the environment through the development of the informal sector. Indeed, Cole (2007) pointed out that strict environmental regulations and laws could encourage companies to resort more to the informal economy in order to achieve maximum profits. In this regard, corruption allows polluting industries to evade environmental regulations and laws. Therefore, Welsch (2004) showed that productive activities in the context of the informal economy are capable of increasing pollution levels and causing degradation of environmental quality. In the same context, Cole (2007) justified a positive impact of corruption on the quality of the environment. The latter showed that corruption could in particular improve the quality of the environment through its negative impact on the rate of economic growth. This could be explained by the decrease in the quantities of pollutants emitted following the decline in economic growth. Welsch (2004) showed that there is an indirect and implicit effect of corruption on the quality of the environment through the effect of corruption on income.

2.1.1. How corruption affects growth?

Many studies have examined the impact of corruption on economic growth, but this has not led to a consensus among economists on the importance of controlling corruption. According to the World Bank (2020), Asian countries experienced a high level of corruption during the period 1986-1996, but this did not prevent these countries from achieving an average annual rate of economic growth of about 7% while it was 2.5% in the rest of the world for the same period. This report could challenge most of the results found in previous empirical studies. Several researchers drawing on the pioneering

work of Mauro (1995) have shown that corruption could hold back growth and development. However, some other studies showed that corruption could have a positive impact on economic growth in the slowness of bureaucratic formalities and the rigid regulations dictated by governments, allow escaping the inefficiencies of imposed policies (Leff, 1964). Thus, corruption could increase economic efficiency and positively influence economic growth. On the other hand, various empirical works reveal that corruption is a destabilizing factor of economic growth. These results are also confirmed by Fredriksson et al. (2004) who found that corrupt officials can waste public funds by diverting collected taxes or by granting advantages to private actors who pay the biggest bribes. Working on a sample of 109 countries, Takuma et al. (2014) found that the interaction between corruption and financial openness could have a significant and negative effect on economic growth. This result showed that financial openness further amplifies the negative impact of public authorities' corruption on economic growth. Dong et al. (2017) showed that the positive impact of corruption on economic efficiency remains conditioned by a real and optimal size of government. This implies the possibility that economic growth can increase the level of corruption. In addition, he found that the level of corruption declines with economic development. This contradiction in terms of the results found leads us to push further studies on the question.

2.1.2. How corruption affects energy?

Although energy is a diversified sector made up of a mixture of public and private actors generally situated in a context of monopoly competition, it is not immune to corruption. According to Transparency International (2020), only nine out of 32 miners where coal, oil, natural gas and uranium mining takes place have a Corruption Perception Index (CPI) score that is greater than 5.0. The other 23 have a score below 4.8. This finding is consistent with the result found by Takuma et al. (2014) who showed that economies heavily dependent on oil are often characterized by a high level of corruption and poor governance. Referring to the work of Fredriksson et al. (2004), corruption can influence energy policy through three channels. First, a higher level of corruption could hamper the stringency of energy policies. Second, according to Takuma et al. (2014), the increased costs arising from the coordination of corruption lead to more rigid energy policies. Third, the weight of lobbying lobbies from owners of capital depends on the distribution of income between these pressure groups. Using dynamic panel data applied on energy intensity (energy consumption per unit of value added) in OECD countries for the period 1982-1996. Fredriksson et al. (2004) found conclusive results. They found that there is a strong correlation between a higher level of corruption and low energy efficiency in OECD countries. Second, increased coordination costs seem to limit the impact of pressure exerted by pressure groups made up of capital owners and workers. By focusing exclusively on energy-intensive sectors, they showed that the costs of coordination have perverse effects in terms of the political influence of these two lobbies.

2.2. Relationship between Energy Consumption and Sustainable Development

Several works have focused on the relationship between economic growth and environmental quality, following an acceleration of the noticeable degradation of air quality. According to the environmental Kuznets curve (EKC), an increase in economic growth could lead to an increase in CO_2 (carbon dioxide) emissions (World Bank, 2019). These emitted quantities of CO_2 begin to decrease when production reaches an optimum level (Dong et al., 2017). The literature relating to the environmental Kuznets curve (EKC) is subdivided into two categories of researches. We find empirical work that is qualified as cross-sectional studies (Shahbaz et al., 2013). The second group of empirical work consists of panel studies (Al-Mulali and Ozturk, 2015). Using a sample of 12 MENA countries to determine the relationship between CO_2 emissions, energy use (EC), and economic growth rate, Ozcan (2013) concluded that the inverted U-shaped EKC assumption is verified for the following countries: Egypt, the United Arab Emirates and Lebanon. Referring to the literature, we can see that energy consumption has negative effects on the quality of the environment (Alola et al., 2019). However, increased CO_2 emissions have caused catastrophic damage to the quality of the environment (Qiao et al., 2019). Some work showed that the consumption of non-renewable energies, although it stimulates economic growth, it could also increase CO_2 emissions. Al-Mulali and Ozturk (2015) tried to determine the nature of the relationship between urbanization (UR), energy consumption (EC), industrial production (IP), trade openness (OT) and political stability (PS) on the deterioration of environmental quality, using a sample of MENA countries and adopting the fully modified ordinary least squares (FMOLS) technique. They concluded that all of these exogenous variables (UR, EC, IP, OT and PS) increase environmental damage in these countries. In addition, a two-way causality has been observed between EC and environmental quality in the short and long term. This causal relationship between EC and environmental quality has not been confirmed in the work of Omri et al. (2015) who found unidirectional causal links running from EC to CO_2 emissions, without any feedback effect. According to Schwab (2019) the relationship between EC and economic growth (GDP growth) has been widely discussed in the context of energy economics. A large number of empirical works such as Begum et al. (2015) and Le Quere et al. (2020) found a strong correlation between EC and GDP growth. Al-Mulali and Ozturk (2015) showed a one-way causality ranging from EC to GDP. Narayan and Popp (2012) found unidirectional causal relationship running from GDP to EC for G6 countries. A long-term, positive, two-way causal links between EC, GDP, and CO2 emissions has been found by Al-Mulali and Ozturk (2015) in Latin America and the Caribbean countries. Dong et al. (2017) found no causality links between EC and GDP.

3. DATA AND METHODOLOGY

3.1. Model Specification

The purpose of this paper is to investigate the impact of control of corruption (CC) on the energy consumption (EC) and sustainable development (SD) through the governance quality indicator (IQG) in 17 MENA countries over the period 1984-2018. To this end, we estimate the following simultaneous equations model:

$$Y_{i,t} = \propto_0 + \propto_1 G_{i,t} + \propto_2 E_{i,t} + \sum_{i=3}^{4} \propto_i X_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$Z_{i,t} = \beta_0 + \beta_1 Y_{i,t} + \beta_2 E_{i,t} + \sum_{i=3}^{4} \beta_i V_{i,t} + \mu_{i,t} \quad (2)$$

$$E_{i,t} = \delta_0 + \delta_1 Y_{i,t} + \delta_2 C_{i,t} + \sum_{i=3}^{4} \delta_i R_{i,t} + \omega_{i,t} \quad (3)$$

where Eq. (1) represents the sustainable development equation, Eq. (2) represents the corruption equation and Eq. (3) represents the energy consumption equation. By introducing all the control and exogenous variables, the three above equations take the following forms:

$$SD_{i,t} = \alpha_0 + \alpha_1 IQG_{i,t} + \alpha_2 EC_{i,t} + \alpha_3 TRADE_{i,t} + \alpha_4 INV_{i,t} + \alpha_5 HK_{i,t} + \alpha_6 FDI_{i,t} + \alpha_7 POP_{i,t} + \varepsilon_{i,t} \quad (4)$$

$$CC_{i,t} = \beta_0 + \beta_1 SD_{i,t} + \beta_2 EC_{i,t} + \beta_3 IQG_{i,t} + \mu_{i,t} \quad (5)$$

$$EC_{i,t} = \delta_0 + \delta_1 SD_{i,t} + \delta_2 CC_{i,t} + \delta_3 CG_{i,t} + \omega_{i,t} \quad (6)$$

where $SD_{i,t}$ represents the supported sustainable development variable, which is determined by the sustainable development indicator used by the World Bank and is calculated as follows:

$$SD = \left(GNI - C_p - CG + NCT\right) - \alpha K_p + \beta K_h - \delta K_n \quad (7)$$

where *GNI* is the gross national income; C_p is the fixed capital consumption of poor households; *CG* is consumption for the public sector; *NCT* is the net current transfer; K_p is produced capital which consists mainly of fixed assets which are used on a permanent basis in production processes for a period of more than 1 year. We obtained the value of produced capital from the balance sheet accounts of the national accounts. It is accepted that the observed market prices for produced capital reliably express their impacts on well-being. K_h represents investments in human capital which are measured by all expenditure on education; K_n corresponds to the depreciation of material capital measured by the sum of depreciation of the depreciated resources plus environmental pollution.

Eq. (4) states that the sustainable development (SD) is a function of indicator quality of governance IQG, energy consumption EC and a set of control and exogenous variables such as trade openness (TRADE), investment (INV), human capital (HK), foreign direct investment (FDI) and population growth rate (POP). Eq. (5) states that the control of corruption (CC) is regressed on sustainable development (SD), energy consumption (EC) and the quality of governance indicator (IQG), which reflects the quality of public services and its degree of autonomy in the face of political pressure and interference, the quality of the execution of policies and the government's credibility towards these policies. Eq. (6) states that the energy consumption (EC) is regressed on sustainable development (SD), control of corruption indicator (CC) and the consumption of government (CG).

In our models, we assume that all the equations are over-identified. Indeed, there are three endogenous variables in the model, that is, SD, CC and EC, and exogenous variables, that is, POP, INV, TRADE, HK, FDI, IQG and CG. In the total we have 10 variables (K=10). Eq. (4) has 6 exclusion restrictions and no constraint restrictions. By applying the identification requirements, the variables in Eq. (4) give: W' = 1, K' = 6 and r = 0 (no correlation between variables) with W' is the number of endogenous variables and K' is the number of exogenous variables. Therefore: W - W '+ K - K' = 3 - 1 + 11-6 = 7 > W - 1 = 3 - 1 = 2, Eq. (4) is on-identified. Eq. (5) presents 7exclusion restrictions but no constraint restrictions. We consequently W = 3, K = 11, W' = 1, K' = 3 and r = 0, which gives: W - W' + K - K' = 3 - 1 + 11 - 3 = 10> W - 1 = 2, Eq. (5) is over-identified. Eq. (6) has 6 restrictions of exclusion but no constraint restrictions. We therefore W = 3, K = 11, W' = 1, K' = 3 and r = 0. This implies W-W '+ K – K' = 3 - 1 + 11-3 = 10> W - 1 = 2, Eq. (6) is over-identified. Since in our model all equations are over-identified, the model will be on-identified. If order conditions (necessary conditions) are satisfied, it is also important to check the rank conditions (sufficient conditions). However, in practice these steps are difficult to implement. This is what prompts us to limit our analysis to the level of checking the order conditions. In our work, the presented model is econometrically over-identified. The Method SUR (Seemingly Unrelated Regression) seems to be the most suitable for dealing with this kind of model. However, we note that our model is characterized by the presence of a problem of endogeneity of order two, which is why the estimate by the Two-Stage Least Squares (2SLS) regressions would be recommended.

3.2. Data Description

The sample data used in this study covering 17 MENA countries namely; Algeria, Bahrain, Egypt, Mauritania, Iraq, Kuwait, Morocco, Qatar, Lebanon, Libya, Oman, Saudi Arabia, Syria, Tunisia, Jordan, UAE and Yemen over the period 1984-2018. The data are gathered from the World Bank World Development Indicators (WDI). The data on governance quality indicators are from the World Bank Worldwide Governance Indicators (WGI). Table 1 provides the data sources and definitions of the variables.

Table 2 presents the descriptive statistics of the variables used. It is shown that the arithmetic means are very low for the variables except for EC and SD. The standard deviation is very low for the different variables except for SD, it is equal to 6.5239. Overall, we can retain that the quality of precision of these variables is very good

Table 1: Definitions of variables

Variables	Definitions	Source
Sustainable development (SD)	The sustainable development	WDI
Control of corruption (CC)	Control of corruption	WGI
Human capital (HK)	Tertiary enrollment rate	WDI
Domestic investment (INV)	Gross fixed capital formation to GDP growth	WDI
Demographic variable (POP)	The population growth rate	WDI
Foreign direct investment (FDI)	Net flows of foreign direct investment	WDI
Trade openness (TRADE)	The sum of exports and imports to GDP	WDI
Government consumption (GC)	The level of government consumption as a percentage of GDP	WDI
Quality of governance (IQG)	The indicator quality of governance	WGI
Energy consumption (EC)	Public spending in energy consumption as a percentage of GDP	WDI

because the variance of each variable in our model is very low. The exception is noted only for the SD since the variance of this variable is very high. Hence, the linear adjustment of development expressed by the SD could be bad. The minimum values of these variables are located around 10 except for SD which takes a minimum figure equal to 0.4511. The maximum values of these variables do not exceed 27 with the exception of FDI which has very high maximum figures.

Table 3 presents the correlation matrix of the endogenous and exogenous variables. The results of the matrix of correlation coefficients indicate that SD positively affects the different variables except HK variable which shows a negative relationship with the SD. Also, the CC variable has a positive impact on the various variables except for HK which is negatively correlated with the CC. TRADE has a positive effect on all variables except for the POP. FDI increases the SD and positively affects the various components of gross domestic product. The results confirm the absence of a multi-collinearity problem since the coefficients of the total correlations between the explanatory variables are low.

Hence, we find a total absence of the correlation between the explanatory variables. We adopt the structural model which allows us to determine the direct impact of each indicator on the endogenous variable. This will allow us to detect the feedback effects exerted between the endogenous variables. We then opt for a transformation of this structural model into a "reduced" one in order to explain how these variables are substituted in the equations of the other endogenous variables.

4. EMPIRICAL RESULTS

The crucial objective of this work is to identify which of the institutional or governance indicators that could better promote the SD and EC. The IQG, in this case, can play a key role in the management of public expenditure, in particular EC and its importance in stimulating the SD. In each equation, we analyze each time the effect of IQG on the other variables. Indeed, we started by primarily determining the direct effect of the IQG on the SD. The regression will be repeated in Eqs. (5) and (6). Table 4 reports the 2SLS regression results of the effects of EC and IQG on the SD.

Indeed, regarding Eq. (4), the regression results show that IQG is positively but statistically insignificant correlated with the SD. This brings us back to remember that the quality of governance does not explain the sustainable development. This result that we have found brings us back to remember that the quality of governance in the MENA region is ineffective. This ineffectiveness stems from the poor institutional quality that accompanies poor governance, which reinforces the ineffectiveness of government power to stimulate the sustainable development in the MENA region. In this context, the capacity of the state to control corruption remains dependent on its credibility with regard to its people and it also depends on the establishment of institutions that should be credible and powerful. From Eq. (5), it shows that the effect of the IQG remains significant at the 1% level and positively correlated with CC. Regarding the effect of the IQG and GC on EC, the regression results show a negative and significant effect of the CC on EC. The empirical evidence also shows a significant negative impact of the SD and GC on EC. Therefore, we can retain that the institutional indicator remains effective since the IQG has a positive indirect effect and could contribute to the creation of wealth in a context of economic and social development. A good orientation of public expenditure towards the energy sector translates into effective action of good governance. This makes it possible to deduce that when GC has a negative effect on EC this comes from a misallocation of resources.

In addition, Filmer et al. (2000) draw on certain research results which assume that a homogeneous distribution of public health expenditure is beneficial for different social groups. They have also shown that the effects of GC on EC will be even greater for poor populations. But it could be argued that before opting for an increase in GC, strategies should be put in place for good governance of GC through a good allocation of financial resources. Finally, we find that the direct impact of GC appears in a clear way on spending that is intended for EC, since the regression results indicate a negative and significant effect at the 1% level. So this brings us back to remember that GC is more essential to improve

Table 2: Descriptive statistics

Variable	Obs.	Mean	SD	Min.	Max.
EC	595	9.7864	1.0696	7.5775	12.2710
SD	595	0.6825	6.52396	0.4511	0.8501
CC	595	−0.2609	1.1339	−14.5747	2.6021
GC	595	0.5446	0.1324	0.1666	0.8733
IQG	595	−0.1623	0.7350	−1.9470	1.9165
TRADE	595	−0.3006	1.1810	−4.6705	1.7633
HK	595	1.1830	0.3073	−1.1006	1.7830
POP	595	2.9142	2.5036	−2.9623	17.4832
FDI	595	2.0238	3.4072	−5.2881	33.5660
INV	595	1.4560	5.0049	0.0002	26.6156

Source: Author's calculations based on data from WDI and WGI

Table 3: Correlation matrix

	EC	SD	CC	GC	IQG	TRADE	HK	POP	FDI	INV
EC	1.0000									
SD	−0.0742	1.0000								
CC	−0.0834	0.1050	1.0000							
GC	−0.2330	0.0435	0.3225	1.0000						
IQG	−0.2789	0.0944	0.4032	0.5160	1.0000					
TRADE	−0.1937	0.0122	0.2690	0.6466	0.4098	1.0000				
HK	0.0673	−0.0341	−0.0515	−0.0377	−0.2196	0.1199	1.0000			
POP	0.1592	0.0720	0.2254	0.1317	0.3563	−0.0019	−0.2527	1.0000		
FDI	−0.2149	0.0783	0.0683	0.0612	0.1178	0.1175	0.2523	0.0938	1.0000	
INV	−0.2364	0.0014	0.0054	0.0525	0.0769	0.4123	0.1274	−0.1325	0.0746	1.0000

Table 4: Two-stage least squares (2SLS) regressions

Variables	SD (4)	CC (5)	EC (6)
SD	-	0.0127*	−0.0256**
		(1.62)	(−2.67)
EC	−0.7390***	0.0039	-
	(−2.12)	(0.12)	
CC	-	-	−0.0318***
			(−3.80)
IQG	0.5247	0.6109***	-
	(0.103)	(8.39)	
HK	−0.3775	-	-
	(−0.31)		
FDI	0.1246	-	-
	(1.31)		
TRADE	−0.2422	-	-
	(−0.79)		
INV	0.0202	--	-
	(0.3)		
POP	0.1234	-	-
	(0.91)		
GC	-	-	−1.7649***
			(−4.6)
_cons	12.6351***	−0.2629	10.8272
R2	(3.24)	(−0.57)	(3.71)***
	0.155	0.213	0.521
No. observations	595	595	595
No. groups	17	17	17

The *t*-statistics are in parentheses. ***,**,*denote significance at the 1%, 5% and 10% levels, respectively

basic social sectors and in particular the energy sector and therefore this GC could stimulate EC. This can only be achieved through good and efficient government management.

However, energy resources did not have a significant positive effect on the MENA economies; by default this impact is by no means positive. The revenues that are generated by energy exports from these countries have been intended to fuel the development of some industrial sectors more than others. Several research studies have shown that oil and gas reserves are also likely to emerge differences between various economies in the world, and even be a source of tension and conflict nationally and bilaterally. Some researchers working on the energy issue have suggested that in countries like Sudan, Iraq and Yemen, the wealth that comes from energy sources in those countries does not automatically translate into prosperity and human development. They have shown that this can only be achieved through good and efficient government management and a local modus operandi that allows a large number of citizens, rather than a few, to benefit and prosper from the energy resources of their country. All of these conditions are essential ingredients for turning energy resources into an engine for growth and development rather than economic decline and recession.

5. CONCLUSION AND POLICY IMPLICATIONS

In this paper, we focused on the impact of the CC on SD through EC. We also tried to know to what extent the IQG in MENA countries is effective in the decisions taken in terms of resources allocation, particularly energy. Using a panel data set of 17 MENA countries over the period 1984-2018, and 2SLS approach, the results suggest that IQG plays a crucial role in the SD. The IQG seems to have a positive and significant effect on the CC, which maintains their role as a catalyst for the SD. The results also show that the IQG alone does not largely explain the SD. This allows us to remember that the quality of governance in the MENA region remains a sterile and ineffective factor. This could be explained as being the result of poor IQG which is accompanied by ineffectiveness of public power in order to avoid wasting GC especially in EC. This ineffectiveness of public authorities could translate into the absence of a will to direct and guide public resources towards the right model of the SD in the MENA region.

Energy resources have undoubtedly played a crucial role in the economic development of MENA region in recent years. The region's energy sources have influenced choices for economic development. They have also shaped economic structures, encouraged certain models of industrial activity and brought about the integration of most of the MENA countries into the world economy. In addition, the industrial oil and gas sectors represent the most important source of income and wealth for many oil and gas producing and exporting countries. This allowed for these countries the creation of modern welfare states among the GC states. Thanks to this, we have also seen the emergence of development programs in a number of medium-sized producing countries. Despite the efforts made by some MENA countries, progress towards the achievement of the Sustainable Development Goals (SDGs) in most MENA countries is still limited.

The Arab Forum for Environment and Development (AFED) report concludes that achieving the SDGs remains a major challenge facing MENA countries. According to the 9th annual report of this forum, these goals cannot be achieved without the resolution of the several violent conflicts in the region (UN–United Nations, 2018). Saab and Abdul-Karim (2016) pointed out that governments in the MENA region will not be able to achieve the SDGs by 2030 by still adopting the same traditional methods. The AFED report argued that a change in the design of anti-corruption strategies is essential if MENA countries are to achieve the SDGs through beneficial energy consumption. A wide range of strategies for good governance are urgently needed to ensure that programs for achieving the SDGs are economically equitable and environmentally acceptable. In addition, the adoption of anti-corruption strategies is a prerequisite for making a qualitative transition towards sustainable development. It is recommended to reform the current institutional qualities at regional and national level, for example by creating councils for sustainable development (Sachs et al., 2018). These institutions help ensure better coordination between government entities and non-state stakeholders. We can see that in all the countries where these new institutions have been put in place, sustainable development is more advanced.

Finally, in order to fight against corruption through the quality of governance, the government authorities are called upon to opt for an update of the standards and legal texts. They must also create new laws likely to affect the socio-economic reality of the citizens of this region. This could be one of the primary objectives of current economic policies in order to improve the wealth of the country while limiting corruption.

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