

The Environmental and Energy Policies to Enable Sustainable Consumption and Production in The Gulf Cooperation Council Countries

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Abstract

The hydrocarbon sector in the Gulf Cooperation Council countries generates a significant trade-off between economic development and the environment. Our paper identifies the challenges and explores the policies that have been implemented in these countries to protect the environment and empower sustainable consumption and production. Moreover, we assess whether these policies succeeded in achieving their goals and why. This paper uses the analytical approach and utilizes the previous studies' findings. We find the institutional actions of the Gulf countries are not enough to generate sustainable consumption and production. These countries remain strongly affected by the hydrocarbon sector, and the diversification achievements are weak. Further, energy price reforms have many problems as a tool to enhance sustainable consumption and production. The Gulf governments have an essential role in this process. They work under the concept of entrepreneurial state capitalist. The government controls all the sectors, including the private sector, to secure the regime. Our results are significant because it shows more improvements can be achieved in the sustainable consumption and production area of the Gulf countries.

1. Introduction

Sustainable economics is an old economic branch that focuses on allocating limited resources to satisfy unlimited wants, desires, and needs. The concern about economic sustainability is growing very fast because of the various economic shocks and global environmental threats, i.e., climate change. Hence, the concept of sustainability becomes broader. Baumgartner and Quaas (2010) define sustainability economics as being ethically founded in the idea of not wasting scarce resources while achieving the two normative goals of (1) the fulfilling of the desires of the current population, and (2) justice, including justice between the present and future generations and justice towards nature. Likewise, Sabapathy (2007) defines it as a permanent economic and social improvement that respects the limits of the Earth's ecologies and meets the needs and aspirations of everyone for better life quality, now and for future generations.

On September 25th, 2015, the United Nations (UN) adopted the 2030 universal agenda for sustainable development (Walsh et al. 2020). It is an action plan for people, planet, and prosperity. The agenda seeks to attain sustained and inclusive economic growth, social development, environmental protection, and combat poverty and hunger. It has 17 sustainable development goals and 169 targets. Goal 12 talks about ensuring sustainable consumption and production (SCP) patterns (Walsh et al. 2020).

Sustainability has been highlighted because of the high expected demand for natural resources during the next two decades. More people are expected to join the middle class. Hence, changing consumption and production patterns are a must to preserve the earth's environment and to guarantee sustainable economics. The change includes reducing food waste, agricultural products, polluting water, reducing CO₂ emissions per capita, and using efficient energy tools. The UN data shows that the world is wasting around USD 1 trillion of food per year, and it can save USD 120 billion annually if the globe switch to more efficient energy use.

Bengtsson et al. (2018) recognize two distinct points of view from the SCP literature to achieve sustainable consumption. The first approach relies on promoting more efficient production methods, i.e., technological improvement and well-informed consumers. The second approach calls for reducing the aggregate consumption level, addressing the income distribution, and adopting social and institutional reforms. Overall, they believe that a successful method to achieve sustainable consumption is to combine the two approaches.

The Intergovernmental Panel on Climate Change (IPCC) has published many reports about climate change during the past years (IPCC 2018). All the reports confirm that global warming is a remarkable fact, leading to severe problems, i.e., raising the temperature of lands, oceans and creating heat waves. These dangerous developments will increase poverty and starvation levels, and human health suffers. The reports warn the Middle East and North Africa (MENA) region from a high risk of drought if the temperature in the region increased by more than 1.5°. The Arab Forum for environment and development (AFED) confirms the low air quality in the Gulf Cooperation Council (GCC) countries. These countries include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

The GCC countries rely heavily on oil and gas exports as a primary source of income. The British petroleum statistical review of the world energy for 2020 reports that these countries own around 30.5% and 19.6% of the world's proven oil and gas reserves, respectively. These countries employ oil and gas sales revenues to boost economic development, improve social and health indicators, and build a first-class infrastructure. Additionally, energy prices for domestic consumption are the lowest in the world, which motivate an excessive energy consumption pattern, influence the economy structure, and threaten the environment. The global ecological footprint is a useful indicator to understand the environmental threats. The average consumption ecological footprint of the GCC countries (8.9 gha/person) in 2019 is higher than that of the world average (2.75 gha/person). During the past five decades, each GCC country has articulated a development strategy based on diversifying the economy to increase production, competitiveness, and move away from the hydrocarbon sector. Over time, job creation for nationals was among the priorities because of oil price fluctuations. Recently, the GCC countries add energy price reforms to the agenda. Further, the energy consumption per capita in the GCC countries is high but vital for economic growth. Unfortunately, it led to a high level of CO₂ emissions per capita.

These facts present a noticeable gap or question in the literature. Why are the GCC countries unable to achieve the SCP patterns? This question motivated our paper. It is critical to understand where the GCC countries' policies and actions stand and why they failed in their mission. Thus, our paper contributes by providing a comprehensive review and understanding of the policies in the area of SCP. These policies are crucial to create a balance between achieving permanent economic growth and preserving the environment. The paper's goals are to identify the environmental challenges and explore the GCC governments' policies to protect the environment and enable the SCP. Moreover, we explain why these policies did not succeed in accomplishing their goals. We focus on the policies related to the energy and environment sector. The GCC countries' historical economic model is the allocation state model. It gives the government a significant role in steering the economy.

The current paper methodology uses two approaches. First, the analytical approach breaks down the GCC policies into sub-sectors to analyze and understand them. Second, we utilize data, remarks, and findings of the previous academic studies to use and connect them in the analytical approach to expand the knowledge and extract results. The analytical approach is useful to explore economic and social problems. It helps to look much deeper into the problem, understand its root causes, its consequences, and how to resolve it. The remaining of the article is organized as follows. Section 2 presents some facts about the GCC countries' energy consumption, production, and CO₂ emissions per capita. Section 3 reviews relevant literature about the relationships between economic growth, energy consumption, and the environment in the GCC countries. Section 4 introduces the GCC governments' actions and policy framework. Section 5 discusses the GCC economic system; moving to the market-based model or changing the government role. Summary and conclusions are made in section 6.

2. Gcc Countries: Energy Consumption, Production, And Co2 Emissions Per Capita

The GCC states are a homogenous group with their economic resources, tribal, cultural, and religious identities. They have a problem of water scarcity and desertification; thus, they rely on water desalination. The water problem becomes more evident than before when the analysis sheds light on the demographic changes. The population number of the group is approximately 58.0 million inhabitants in 2019, which is around 11.0% of the MENA population. The annual average population growth rate is high and reached 4.1% during the period (1975-2019). The high energy consumption and production per capita in the GCC countries are stimulated by the high annual population growth rate, water desalination, low energy prices, and high economic growth rate. The world bank development indicators (WBDI) illustrate that the average real economic growth of the GCC states is about 4.0% during the period (1995-2019).

The available data proves the massive energy consumption and CO₂ emission per capita in the region. Table (1) reveals and contrasts the GCC countries' energy use with three industrial countries, Japan, France, and the UK, during the period (1971-2014). The comparison displays a high energy consumption per capita of the GCC states relative to the industrial economies. The GCC group energy consumption is 2.3 times more than that of the industrial countries. This divergence opens an essential question about the efficient use of energy in the GCC states. Abdel Gelil (2017) states that the Arab countries have been characterized as one of the least energy-efficient regions globally. Table (2) introduces the GCC countries' electricity consumption (kW. h) per capita and compares it with that of the three industrial countries during the period (1975-2014). The electricity consumption increased by almost six times during the past four decades in the GCC countries. Further, the electricity consumption per capita in the GCC states is larger than that of the individual industrial countries by around 1.50 times.

The historical low energy prices, high economic growth rates, and demographic movements have led to massive pressures on the environment, i.e., increasing levels of CO₂ emissions per capita. The WBDI display that the GCC states' average contribution to the world CO₂ emissions reached 1.78% during the

period (1971-2014), but this contribution expanded to 2.49% during the period (2000-2014). Table (3) illustrates and

Table (1) Energy use (kg of oil equivalent per capita)

of the individual GCC countries and three industrial countries (**in thousands**)

Years	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE	Japan	France	UK
1971	6.39	7.64	0.11	7.75	1.21	3.63	2.53	3.02	3.73
1980	7.80	7.62	1.00	14.80	3.19	6.94	2.95	3.47	3.52
1985	9.92	8.07	1.41	15.22	3.49	9.86	3.01	3.59	3.55
1990	10.56	4.34	2.33	13.70	3.55	10.98	3.55	3.83	3.60
1995	11.41	9.18	2.77	15.87	4.51	11.31	3.94	3.98	3.73
2000	11.99	9.13	3.34	18.44	4.71	9.99	4.08	4.14	3.79
2005	11.68	11.54	3.94	19.27	5.13	9.72	4.06	4.29	3.69
2010	10.21	10.70	6.15	15.53	6.76	7.46	3.89	4.02	3.23
2014	10.59	8.96	6.14	18.56	6.94	7.77	3.47	3.66	2.78
Avg.	10.07	8.10	2.77	15.54	4.12	8.58	3.45	3.76	3.57

Source: World Bank Development Indicators Via the Data Stream.

Table (2) Electricity consumption (kW. h) per capita

of the individual GCC countries and three industrial countries (**in thousands**)

Years	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE	Japan	France	UK
1975	2.63	4.17	0.15	3.80	0.53	2.32	4.03	3.25	4.49
1980	4.61	6.06	0.62	9.72	1.97	5.75	4.72	4.42	4.68
1985	15.93	8.17	1.47	10.07	3.07	8.63	5.33	5.26	4.83
1990	15.62	8.22	2.19	9.59	4.02	8.50	6.81	5.97	5.36
1995	20.55	13.15	2.58	10.74	4.93	9.40	7.70	6.62	5.58
2000	20.01	14.07	3.20	14.35	5.66	12.31	8.30	7.22	6.11
2005	21.33	17.08	3.92	15.46	6.62	12.28	8.54	7.65	6.27
2014	19.60	15.59	6.45	14.78	9.40	11.09	7.82	6.94	5.13
Avg.	15.40	11.57	2.78	11.53	4.79	9.04	6.85	6.19	5.40

Source: World Bank Development Indicators Via the Data Stream.

compares the CO₂ emissions per capita between the GCC countries and the three industrial countries. The CO₂ emissions have a remarkable increase over the time horizon. It is almost increased by nine times during the past four decades. On average, the CO₂ emission per capita in these countries is higher by three times than that of industrial countries.

The GCC energy pricing policies play a crucial role in encouraging the consumption pattern and increasing CO₂ emissions. These countries adopted programs of subsidizing energy and food. As a result, their energy prices are the lowest in the world. The term subsidy is the financial support that developers (producers) or consumers receive from governments, leading to lower prices (Wei et al. 2021). In 2015, the GCC countries started to abolish the subsidy. Figures (1) and (2) introduce and compare electricity and gasoline prices in 2019 between the GCC countries and Arab and industrial countries. We report the GCC countries' prices after removing almost half of the subsidy. Indeed, these countries have the lowest energy prices, even without half of the subsidy.

Table (3) CO₂ emissions per capita (t)

of the individual GCC countries and three industrial countries

Years	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE	Japan	France	UK
1971	13.80	33.88	2.80	76.64	9.80	75.98	7.55	8.81	11.82
1975	21.59	16.42	8.23	66.64	11.22	56.05	7.77	8.24	10.74
1980	21.92	17.98	5.24	58.53	17.39	35.40	8.11	9.13	10.29
1985	24.31	16.77	5.78	33.43	13.09	35.89	7.58	7.06	9.90
1990	25.06	24.29	6.28	24.71	11.38	27.96	8.87	6.42	9.71
1995	26.29	34.04	7.21	61.91	12.55	28.85	9.43	5.86	9.28
2000	28.05	26.12	9.65	58.64	14.3	35.68	9.62	5.95	9.2
2005	21.60	31.43	11.90	58.92	16.63	25.36	9.70	6.10	8.98
2010	23.59	29.89	15.59	40.74	18.91	19.44	9.15	5.43	7.86
2014	23.45	25.22	15.44	45.42	19.53	23.30	9.54	4.57	6.50
2016	22.23	24.95	14.17	38.90	17.37	22.04	8.94	NA	5.78
Avg.	23.57	23.76	9.03	52.29	14.88	34.46	8.77	6.85	9.34

Source: World Bank Development Indicators Via the Data Stream. Data for France is available for 2014 only.

Moreover, oil revenues contribute positively to economic development and public welfare in the area. The human development index (HDI) increased remarkably from 0.73 in 1990 to 0.84 in 2018. Besides, the average relative importance of health expenditure to GDP reached 3.22% during the period (2000-2016). Accordingly, the life expectancy at birth expanded from 60.3 years in 1970 to 77.2 years in 2018.

3. Literature Review: The Previous Empirical Works

Literature has extensive empirical works on the relationship between energy consumption, economic growth, and the environment. Tiba and Omri (2017) perform a comprehensive literature survey on this strand of research. Likewise, Kais and Sami (2016) brief around 27 studies from the same research area. Tiba and Omri (2017) summarize the main conclusions of approximately 400 studies. Remarkably, they report only two studies, Al-Iriani 2006; Salahuddin and Gow 2014, which examine the relationship between these variables in the GCC countries. They also report two single studies about Saudi Arabia, Alkhatlan et al. 2012; Alkhatlan and Javid 2013, and one single study about the UAE, Shahbaz et al. 2014. The empirical research on economic growth, energy consumption, and the environment can be divided into three different spectrums. First, examining the relationship between energy indicators and economic growth. Second, investigating the existence of the environmental Kuznets curve (EKC). Third, exploring the relationship between economic growth, energy consumption, and CO₂ emissions.

Muhammed (2019) performs a recent study including a sample of 68 countries, of which MENA countries.

Based on our knowledge, we compile all the previous empirical studies, which investigate the relationships between energy consumption, economic growth, and the environment of the GCC countries. Most of these studies concentrate on exploring the causality relationship between the variables. Causality relationships fall into four types. First, a unidirectional causality running from energy consumption to real output “the growth hypothesis.” Thus, any constraint on energy use may negatively affect the real economy. Second, a unidirectional causality from real output to energy consumption “the conservation hypothesis.” In this case, the government can adopt a conservative policy of energy consumption without a significant influence on real output. Third, a bidirectional relationship; it means that economic growth and energy consumption are jointly determined “the feedback hypothesis.” Fourth, there is no causality between economic growth and energy consumption “the neutral hypothesis”; thus, policy implication does not exist.

Table (4) presents the previous empirical studies concerning the GCC area. The number of studies in this research area is limited, and most of them initiated in the last decade. These studies show a significant relationship between economic growth, energy consumption, and CO₂ emissions. Some studies confirm a bidirectional causality relationship, while others prove a unidirectional causality. Based on the results, the GCC countries should adopt conservative energy policies. The policymakers should understand the type of link between economic growth and energy consumption in each country fully. Among the previous empirical studies, there are two empirical studies, Sweidan 2018; Sweidan and Alwaked 2016, which explore the impact of economic development on economic sustainability. Those two studies conclude that GCC economic development increases environmental stress. In the same vein, Al-Mulali and Ozturk (2015) and Mahmood et al. (2020) find that energy consumption, urbanization, trade openness, and industrial development increase environmental damage.

In sum, our presentation proves that GCC countries have massive energy consumption and CO₂ emissions. Simultaneously, the previous empirical works admit the importance of energy consumption to the GCC economy. They confirm significant links between energy consumption, economic growth, CO₂ emissions, and environmental stress. Any random changes or unspecified policy action may adversely affect the economy and the environment. Hence, energy policy should be studied carefully in each country. These facts restrict the government maneuver to create genuine changes in economic policy and sustainability. However, we think that the GCC countries can adopt an efficient energy-environmental policy by taking more solid actions toward new

Table (4): A summary of the previous studies in the MENA and GCC countries

No.	Study	Countries	Period	Methodology	Results
1	Mahmood et al. (2020)	Saudi Arabia	1968-2014	ARDL model	Industrialization and urbanization impede the environment.
2	Sweidan (2018)	13 MENA countries	1995-2013	Panel analysis	The economic performance or economic sectors increases the environmental stress (EIWB)
3	Sbia et al. (2017)	UAE	1975–2011	ARDL model and VECM Granger causality	A bi-directional causality between electricity consumption and economic growth. The EKC hypothesis exists in the UAE.
4	Sweidan and Al Waked (2016)	The GCC countries	1995-2012	Panel analysis	The economic development increases the environmental stress (EIWB)
5	Al-Iriani and Trabelsi (2015)	The GCC countries	1980-2011	Time series and panel analyses	Causality relationships exist, but not homogeneous in all countries.
6	Al-Mulali and Ozturk (2015)	14 MENA countries	1996–2012	Panel analysis and the fully modified ordinary least square (FMOLS)	Energy consumption, urbanization, trade openness and industrial development increase environmental damage.
7	Salahuddin and Gow (2014)	The GCC countries	1980–2012	Granger causality test.	The economic growth does not Granger cause CO ₂ emissions, but economic growth Granger cause energy consumption.
8	Sbia et al. (2014)	UAE	1975–2011	ARDL model and VECM Granger causality	A bidirectional causality between CO ₂ emissions and economic growth, and a bi-directional causality between CO ₂ emissions and energy consumption.
9	Shahbaz et al. (2014)	UAE	1975–2011	ARDL model	The EKC hypothesis exists in the UAE. Economic growth Granger cause CO ₂ emissions. A positive relationship between urbanization and CO ₂ emissions.
10	Ozcan (2013)	12 MENA countries	1990-2008	Panel cointegration test and the FMOLS	Support the EKC hypothesis in UAE, Egypt, and Lebanon.

11	Alkhatlan and Javid (2013)	Saudi Arabia	1980–2011	ARDL and VECM models	A bidirectional relationship between CO ₂ emissions and economic growth.
12	Sweidan (2012)	UAE	1973–2008	ARDL model	In the short-run, a bidirectional relationship between energy consumption and real output. In the long-run, a unidirectional relationship from real output to energy consumption.
13	Alkhatlan et al. (2012)	Saudi Arabia	1980–2008	ARDL and VECM models	In the long run, output leads to greater CO ₂ emissions.
14	Mehrara (2007)	11 oil exporting countries, including 5 GCC countries	1971-2002	Panel cointegration	A unidirectional from output to energy consumption.
15	Squalli (2007)	OPEC members	1980-2003	ARDL model	A bidirectional relationship between energy consumption and output.
16	Al-Iriani (2006)	The GCC countries	1971-2002	Panel cointegration	A unidirectional from output to energy consumption

Source: compiled by the author.

technologies. It includes shifting to renewable energy, i.e., solar and wind. This shift helps the GCC countries diversify their energy resources and reduce fossil fuel's negative impacts. These countries have initiated some reforms, i.e., establishing research and development centers to enhance renewable energy deployment. It includes Masdar City in the United Arab Emirates (UAE) and King Abdullah City for Atomic and Renewable Energy in Saudi Arabia. It is useful to mention that UAE has initiated its nuclear energy program and built its first power plant in the region. It is expected to start working in 2020 (Al-Saidi and Haghirian, 2020). In the same vein, a recent strand of research in environmental economics, i.e., Ma et al. 2020; Chen et al. 2020; Ma et al. 2019, provides assessment models and guidance for the governments on carbon emissions mitigation strategies to stimulate low-carbon communities.

4. Government Actions And Policy Framework

Historically, the allocation state model has been controlling the economies of the MENA region. The role of the private sector in the economy is trivial because of the following reasons. First, the regional colonial powers have drawn national borders and formulated local governments. Thus, they become the legal heir of all economic and social decisions of the colonial power and tribal system (the patriarchy system). Second, the government is viewed as the primary provider of economic welfare and aids to its citizens, which is consistent with the Keynesian model. Third, the existence of global power, i.e., the former Soviet

Union, who implemented the allocation state model as the principal performer in the economy. Fourth, the detection of gas and oil in the GCC states and the significant flow of the dollar revenues (Yousef 2004). Hence, one of the essential questions was how to allocate the generated income among the citizens? Like the other MENA countries, the GCC countries relied heavily on the command instruments rather than the market-based instruments to allocate the resources. For example, the remedy for the market shortages was by supplying more goods and services, but not by adjusting the market prices.

Accordingly, the GCC different development plans adopted key policy targets and actions to guarantee sustainable economic development and protect the environment. Implicitly, these actions were trying to protect the environments via institutional arrangements and enhance the local private sector's contribution via economic diversification (Abdel Gelil 2017). Unfortunately, these policies did not succeed in achieving their goals. As a result, the GCC countries have moved closer to the market-based instrument via reforming the energy prices. Below, we discuss three key policy actions and institutional arrangements.

4.1 Institutional arrangements and startup procedures

The GCC countries have many cooperative institutional arrangements to support the environment and guarantee sustainable development. The GCC governments' development actions and policies have three different levels. First, the individual country level. Second, the GCC countries level via the GCC general secretariat. The GCC countries' organization structure is as follows: the supreme council, the ministerial council, and the secretariat general. Third, the League of Arab States via the economic and social council (Abdel Gelil 2017). The second and third levels are part of the cooperative framework among the GCC and the other Arab countries. Their goals are to enhance coordination, integration, and interconnection to achieve unity.

The Unified Economic Agreement of 1981 and 2001 assured that the GCC countries should harmonize their gas and oil industry policies, i.e., extraction, refining, marketing, processing, pricing, exploiting of natural gas, and development of the energy resources. Also, the member countries should develop standard oil policies and take common positions towards political matters that are of common concern to the GCC countries (GCC-SG 2014).

In 1985, the Supreme Council meeting in Muscat adopted policies and general rules to develop strategies for future environmental activities in the GCC States. We present, below, the most critical four policies and as follows (GCC-SG 2014):

1) Adopting a comprehensive concept of the environment. It includes all surrounding media such as water, air, land, and all elements therein, for instance, inanimate things, plants, animals, natural systems and processes, and human activities. **2)** Establishing and completing the legislative and coordinating bodies, supporting the executive bodies in charge of implementing the regulations, rules, and standards of environmental protection, and providing observation and surveillance capabilities. **3)** Promoting the community's awareness of environmental issues. Besides, fostering the sense of individual and collective

responsibility for environment conservation. **4)** Encouraging scientific research to identify the environmental problems and preparing a directory of the available expertise in environmental protection.

Following the abovementioned policies, the environmental ministers at the GCC countries have adopted the first action plan, which included the following goals:

i) Surveying the environment protection bodies to identify their structures, organization, and powers. **ii)** Identifying the familiar and similar environmental problems in the GCC States. **iii)** Compiling and reviewing the environmental standards, laws, and legislation at the GCC States and making recommendations for completing and unifying them. **iv)** Surveying the environment awareness programs in the various media and education at school curricula. **v)** Utilizing the studies' results that are conducted by the regional and international organizations in this research. These action plans succeeded in establishing around eleven environmental laws and standards. We report them, their goals, and place and year of approval in Table (5).

Table (5): Environmental laws and standards of the GCC countries

No.	Law Name	Goal	Place and year of meeting
1	The general environment protection law	A comprehensive framework incorporating the basic rules for environment conservation and protection.	Muscat, 1995
2	The common law for the environmental assessment of projects	Observing the environmental impact of the various projects.	Muscat, 1995
3	The common law for protection of wildlife	Developing legislation for the protection of wildlife; planets and animals.	Kuwait, 1997
4	The common law for handling radioactive substances	Protecting man's health and environment from the hazards of radiation and radioactive substances.	Kuwait, 1997
5	The common law for waste management	Protecting man's health and the various environmental components from the hazards of the solid and toxic waste.	Kuwait, 1997
6	Coordination of procedures among the GCC countries	Trans-border handling of hazardous waste for processing, recycling or disposal.	Kuwait, 1997
7	The common law for the management of hazardous chemicals	Controlling the practices of the Management of Hazardous Chemicals.	Muscat, 2001
8	The common law for the management of healthcare waste	Developing an adequate approach for controlling the production, sorting, storage, handling, disposing, and processing of healthcare waste.	Muscat, 2001
9	The environmental criteria and standards for the quality of air and water	Identify the pollution levels.	Manama, 2004
10	The common reference law for controlling the Ozone depleting materials	Eliminate the use of Ozone depleting materials and substituting	Abu Dhabi, 2005
11	Approved five reference manuals in the field of protection from radiation.	Protecting man's health and environment from radiation and radioactive substances.	Kuwait, 2009

Source: GCC-SG (2014).

The Ministerial Council meetings in 2007 and 2011 decided to establish the GCC Disaster Control Center and the Environmental Monitoring Center, respectively. The coordination among the GCC countries has motivated them to participate in around 24 international environmental conventions and agreements, i.e., Vienna 1985, Kyoto 1997, and Paris 2015. The GCC countries have initiated a historical interest in

environmental safety, starting from the Vienna convention of 1985. The international initiations gave the GCC countries the motivation to establish and develop environmental legislation to comply with the international community.

The core question is, do all the mentioned policy actions are enough to generate an adequate understanding of the environmental threats and effective environmental protection? The Arab Forum for Environment and Development (AFED) highlighted an answer to this question via its public opinion surveys. AFED conducted three surveys in 2006, 2009, and 2017, and their main conclusions are the same. AFED (2009) surveyed 19 Arab countries. All the GCC states were in the study sample and received 2322 responses. The survey aimed to discover the Arab public awareness of environmental threats because of climate change. The Arab countries are highly vulnerable to climate change impacts because they suffer water scarcity and recurrent drought. The survey found that 98% of the respondent believed that the climate is changing, 89% stated that it was due to human activities and excessive energy use, and 51% believed that the governments did not act sufficiently and effectively to address the problem. The survey concluded that no practical work is being executed to make the Arab countries prepared for climate change threats. There were no research efforts to examine the effects of climate change on health, food production, infrastructure, biodiversity, water, and tourism.

AFED (2017) re-surveyed 22 Arab countries for the same purpose, all the GCC countries were in the study sample too, and it received 20,460 responses. The respondents said that the most critical environmental challenges are solid waste, weak environmental awareness, deterioration of water resources, pollution, and climate change. More than 60% of the respondents believed that the environment has deteriorated in their countries over the last ten years. Moreover, around 95% think that their countries are not doing enough to tackle environmental threats. Respondents expressed their willingness to participate in environmental activities to protect the environment; 73% said they were ready to participate in environmental awareness campaigns, and 65% were fully prepared to comply with environmental legislation fully. Respondents believed that the primary causes of environmental deterioration were bad environment management, non-compliance with environmental legislation, weak environment institutions, and inadequate government spending on the environment. The survey indicated that respondents are calling their governments to place more tangible steps toward environmental protection. In sum, the GCC countries have established many institutional arrangements on different levels to enhance economic development and support environmental sustainability. However, the endeavors are not enough to comply with the announced goals in order to attain them.

4.2 Economic diversification of the GCC countries

Diversification in the GCC countries means vertical diversification, which is developing new economic sectors that encourages forward and backward linkages in the economy. A long time ago, the GCC countries realized that diversifying their economies away from the oil and gas sector is a strategic plan to overcome four major issues. First, gas and crude oil resources are finite, and their prices fluctuate considerably, which creates unstable income (Hvidt 2013). Recall that the government budget of each

GCC state is connected with a fiscal break-even oil price in each year. Second, the extensive exploitation of natural resources, namely gas and crude oil, crowding out the other economic sectors. It is known in the literature by the Dutch disease. Therefore, diversifying the economy guarantees extra production and income. Third, economic diversification is an essential tool to face the challenges of climate change and preserve the environment. There is no doubt that climate change and global warming harm the different economic sectors, i.e., agricultural and tourism, specifically in fragile desert environments. Moreover, the current international efforts and procedures to combat greenhouse gas emissions and climate change may add more uncertainty to the GCC income (Al-Sarihi 2018). Fourth, economic diversification opens significant participation with the private sector; it guarantees more job opportunities for the national labor force (Hvidt 2013).

The GCC economies have begun to encourage entrepreneurs and small- and medium-sized enterprises as a potential initiative to diversify the economy, enhance economic growth, employment, and human and social development. However, the governmental efforts on this part are not enough to generate a thriving entrepreneurial ecosystem. (Tok 2018). The global ranking of global entrepreneurship and doing business indices of the GCC economies reveal a definite gap among these countries. The global entrepreneurship index (2019) is a multifaceted measure of the entrepreneurship ecosystem worldwide; it evaluates 14 components of the entrepreneurship ecosystem of 137 countries (Acs et al. 2019). While the World Bank report of doing business (2019) provides quantitative measures of business regulation in 11 regulatory areas central to how the private sector functions (World Bank 2019). Besides, there are definite shortcomings in front of the private sector to establish a private-owned business. Thus, the governments should develop broader strategies to improve the current situation. Economic diversification is still on the agenda of the economic development plans or the GCC countries' economic visions.

Did the economic diversification achieve its stated goals? We rely on historical data to answer this question via three indicators. First, we estimate the shares of the oil and non-oil sectors of the GCC countries during the period (1980-2017), as shown in Figure (3). The relative importance of the gas and oil value-added has increased or stayed constant in most GCC countries. Second, we compute the relative importance of oil and gas revenues to each GCC country's GDP during the period (1980-2016). It is more accurate to use the ratio of the oil revenues to the government revenues, but the information is not available for all the GCC countries. We report the indicator in Figure (4). It confirms the conclusion of Figure (3): the oil revenues have almost a constant ratio to the GDP. The GCC economies' diversification achievements are weak; the ratio of the hydrocarbon sector to GDP is almost the same. Third, we compute the GCC countries' real GDP growth rates and oil prices during the period (1995-2019), as displayed in Figure (5). Without a doubt, the two variables moving together, and the oil price growth rate leads economic growth rate. The abovementioned evidence confirms that the GCC economies remain strongly influenced by the oil prices' movements, and the diversification achievements are weak.

Hvidt (2013) conducts an interesting study about the GCC economic diversification. His research covers the last five decades. He uses various textual references, reviews the development plans, performs field studies, and conducts close to a hundred interviews with planners and decision-makers. He concludes

that the GCC countries have adopted necessary procedures to diversify their economies away from the gas and oil industry during the past five decades. Implicitly, the diversification core idea was to achieve a gradual and considerable move from the allocation state model to a more production-oriented model. The newly established model would encourage the private sector (including the citizens) and the government sectors to engage in the production of various goods and services. The government would rely on the proceeds from this new production to finance and create new economic cycles. As a result, the GCC governments established a first-class infrastructure, amended the health system, constructed a comprehensive educational system, and encouraged the private sector to engage in the production process. However, despite all the efforts, gas and oil remain the dominant sector in the GCC economies.

The GCC countries did not achieve significant progress in their economic diversification plans for five reasons. First, the institutional decisions to support diversification, as a strategic plan, negatively affected by oil prices; when the oil prices increased, the emphasis on economic diversification decreased.

Second, the GCC economies implement the allocation state model. Thus moving to the production-oriented model needs fundamental institutional and political changes. Hvidt (2011) concludes that the institutional reforms before 2008 were initiated but not enough to shift the economy to the production-oriented model. Additionally, Hvidt (2013) calls the GCC economies to rely on strategic investments in economic assets, infrastructure, and education and execute more political, economic, and social reforms. Further, Sez nec (2011) demonstrates that the development policies in the late 1970s relied primarily on import substitution as a tool for diversification. However, it was not entirely successful because of the competitiveness and the conflict of interest issues. There were clear trade-offs; if the local economy were to drive out imports, then the produced goods would either have to be highly competitive, which is impossible or protected by very high tariff barriers. Adopting the import substitution strategy with high tariff barriers will decimate the merchant class (the elite), who have significant political power. Therefore, imposing high tariffs and substituting imports were challenging to be attained.

Third, the MENA region suffers continuous political instability a long-time ago, which harms economic growth (Sweidan, 2017). The GCC governments cannot proceed in their economic development plans if the region experiences wars and conflicts. Fourth, Looney (1994) points out several problems which are responsible for weak economic diversification in the GCC countries, i.e., lack of comprehensive diversification strategy, instability of the labor market because of the significant dependence on expatriate workers, unbalanced consumer perception, and the administrative bureaucracy (Hvidt 2013). Fifth, we cannot ignore the adverse effects of the world's economic crisis and coronavirus disease (COVID-19) pandemic on the success of economic diversification. The slowdown or the deterioration of the world economic growth implies a lower aggregate demand, lower oil prices, and a more much likelihood of protectionism.

4.3 The energy price subsidy

Historically, the price subsidy of energy and food is an integral part of the social contract in the GCC countries and the MENA region (Al-Saidi 2020). Subsidies have increased in response to commodity price

increases, social demands, and political development in the GCC countries. Its primary direct mission is to support and protect households and businesses from oil price fluctuations. It is also a tool to redistribute the wealth created by the GCC countries' natural resource endowments to their citizens. Moreover, it contributes positively to political stability in the region during the past four decades. However, subsidies have adverse effects, i.e., encourage excessive energy consumption, weaken the current account, waste resources, enhance CO₂ emissions, and exaggerated pollution. Further, cheap energy prices influence the economy structure by encouraging energy-based technologies and capital-intensive industries, i.e., cement, petrochemicals, and fertilizers (IMF 2017b). The International Monetary Fund (IMF) (2015a) estimates the cost of low energy prices in the GCC states for 2015, as foregone revenues, by around 5% of the GDP.

The average relative importance of fossil fuel subsidy to the GCC countries' GDP is 6.5% during the period (2010-2014). The subsidy ratio to GDP started to decline in 2015. Thus, the average ratio of fossil fuel subsidy to the GDP decreased to 3.4% throughout the period (2015-2018). The decline was trivial in some countries, i.e., Kuwait, from 6.5% in 2010 to 5.3% in 2018. However, it was remarkable in other countries, i.e., UAE, from 7.1% to 2.8% over the same period (IEA 2019). The drop is motivated by the remarkable deterioration in the oil prices in the mid of 2014. The oil price declined from \$108.37 per barrel in June 2014 to \$29.78 per barrel in January 2016. It caused governments budget deficits in the GCC countries during the period (2015-2019). On average, the actual oil price was below the fiscal breakeven oil price by around \$19.16 per barrel during the period (2015-2019). Fiscal consolidation, i.e., imposing taxes and energy price reforms, was to re-balance the government budget and the economy.

Figure (6) presents the major fiscal reforms across GCC countries. In 2015, the GCC countries adjusted upwards of electricity tariffs and local fuel prices (petroleum products and natural gas) considerably by reducing or eliminating the price gaps. The UAE has eliminated the energy subsidy, while the other GCC countries have initiated the reform, but the subsidy remains (IMF 2017b). The IMF (2017a) stated that the energy subsidies in the GCC have fallen from \$116 billion in 2014 to \$47 billion in 2016.

The previous experience says not all the subsidy reforms attained their announced goals. The IMF (2013) explores the practice of 22 countries in the area of energy price reforms over 28 reform episodes. The goal of the study was to provide insights from country case studies to identify ingredients for successful subsidy reform. It finds that only 12 episodes were classified as a success, 11 partially or fully lost the reform gains over time, and five did not succeed. It also finds many barriers to successful subsidy reform: the adverse impact on the poor is unknown, and weak macroeconomic conditions; the resistance to the reform is lower when economic growth is relatively high, and inflation is low. The IMF (2013 and 2017b) proposes some critical messages for a successful energy price reform based on the experience from different countries: construct a comprehensive reform plan and communicate with the public.

The question is, do the GCC economies will succeed in their agendas of energy price reform? Without a doubt, it may be a good chance for the GCC countries to depend on the market mechanism as a resource allocator, which will help to reduce the waste resources. However, there are many concerns about this

policy. First, the energy reform policy's primary motive is not to adjust the historical distortion in the local energy prices but to face a significant challenge related to the government budget deficit. Therefore, we may expect a termination for these reforms if the oil prices adjusted upward. The previous experience supports our statement; in 1950, Saudi Arabia introduced personal income, capital gains, and corporate taxes on nationals and non-nationals, but taxes were suspended due to high oil revenues and the need to recruit expatriates to develop the economy (IMF 2015b).

Second, the reforms were established under weak macroeconomic conditions; the economic growth is slowing down during the period (2015-2019), and some countries, i.e., Kuwait, Oman, and Saudi Arabia, registered negative economic growth rates during that period. More importantly, real GDP in the region is expected to fall by 4.1% in 2020 because of COVID-19 (IMF 2020). Third, the reform policy may adversely affect the competitiveness of the energy-intensive sectors, which are leading sectors in the GCC countries. The IMF (2015a) expects a manageable impact on industrial activity and an adverse effect on energy-intensive industries. However, it expects significant permanent real income gains for the economy in the long run.

Fourth, the effect on the poor is not determined. The IMF (2015a) predicts that the energy price reforms would generate a small inflationary influence in the GCC economies because the energy products have a low weight in the consumer price index (CPI). We think that the weights reported in the IMF (2015a) are not the actual weights because they should be adjusted to exclude the subsidy. Besides, energy is an input in all the sectors of the economy, which means it has a magnification effect. Fifth, none of the GCC countries proposed measures in the reform strategies to protect the poor except Saudi Arabia (IMF 2017b). The IMF (2013) finds that 65% of the 28 reform episodes relied on targeted mitigating measures: cash transfers and social programs. The ratio of expatriates to the total population in the GCC states is around 48.1%. A large portion of this group is poor workers with low wages. Hence, the price energy reform may influence this group harshly. A safety net should cover this group of poor expatriate workers because of their relative importance in the economy.

5. Moving To The Market-based Model Or Changing The Government Role

The GCC governments' policies did not achieve significant progress in their announced goals in sustainable economy and environmental protection over the past five decades. The abovementioned evidence of the current paper supports our conclusion. The current paper mentions many challenges and obstacles, which were constraints to accomplish the various declared objectives. However, we raise a core and logical question about the desire of the GCC governments to create a complete change in the area of sustainable economics? We ask this question because the GCC governments, historically, were the major players in their economies. Implicitly, the economic diversification and the energy price reforms imply moving to the market-based model. Therefore, our specific concern is, do the GCC governments are serious about moving closer to the traditional market-based model, or is it changing the role? Answering this question is significant because it highlights the interconnection between economic decisions and

political decisions. Accordingly, the improvement of the SCP pattern can be initiated by a political decision.

Adopting economic reform to be closer to the free market economy has a cost. It reconfigures the social contract or the relationship between the citizens and the state. It implies renegotiating the provision of benefits to citizens, i.e., subsidies, health, and education services. Also, there will be taxes and extra fees and duties. More political rights and freedom should accompany the movement toward the new situation. If these costs are high to the political regime, then the adjustment process may be slow, or the political regime may cancel it and bring a new solution. Thus, the institutional economists, i.e., Acemoglu and Robinson, 2008; Dixit, 2007, agree that the economic reforms depend primarily on the nature of the political regime. We, therefore, agree with Tok (2018) that the primary interest of the GCC countries is regime security.

There are three factors responsible for reducing the speed of economic reforms in the MENA region, including the GCC countries. These factors are: First, the nature of the political regimes; minimal progress in democratic and public accountability institutions means a lower desire to change. Second, the persistence of political instability, conflict, and violence; the more political instability indicates the lower desire to perform the required reforms. This factor can be achieved by diverting resources to military expenditures, increasing risk aversion to reforms, and changing the political regime's priorities. Third, oil and gas revenues affect the reforms directly via reducing the incentives to undertake reforms and indirectly via influencing the public sector accountability and efficiency (Nabli et al. 2008). On the other side, the neo-liberal economic policies, which the US and the IMF suggested, had damaged the MENA economies. Thus, it reduces the trust in the free-market policies as a resource distributor (Turan 2018).

We believe that the GCC governments have established a hybrid model through the adjustment process. Some researchers, i.e., Bremmer 2009; Gray 2011, point out the establishment of the "Entrepreneurial State Capitalist" in the GCC region starting from the 1990s. Gray (2011) considers it one of the features of the rentier state theory, a political economy theory that seeks to understand state-society relations in states that generate a large proportion of their income from rents, i.e., oil revenues. According to Bremer (2009), state capitalism started in 1973 during the Arab oil embargo. He determines four waves of state capitalism. The last wave started by the great recession (2007-2009) and led by the industrial countries' lawmakers. Meanwhile, Alami and Dixon (2020) mention some signs of the State Capitalism rise. It includes bailing out the financial systems following the 2008 financial crisis and expanding state-owned enterprises and sovereign wealth funds. It means that the role of the government has been changed. It moves from managing, dominating, and approving economic policies to set strategic goals, visions and engage in the production process internally and externally by state-owned businesses.

The governments' role has evolved for many reasons, i.e., state maturity, secure the regime, globalization, and development policies. Examples of the state-owned businesses in the UAE, a significant portion of Dubai's largest firms are state-owned businesses, i.e., Dubai World and Dubai Holding. In Saudi Arabia, the Saudi Basic Industries Corporation (SABIC) and the National Commercial Bank. Other businesses

across the GCC countries include airlines and telecommunications companies. Moreover, the GCC governments prefer a particular type of private sector to support the state and its state capitalist structure. Those businessmen belong to the political elite, merchant families, other well-connected individuals, and sometimes some foreign businesspeople (Gray 2011). State capitalism has four leading players: national oil corporations, state-owned firms, sovereign wealth funds, and privately-owned national champions (the preferred type of private sector). The sovereign wealth funds are used to finance state-owned businesses (Bremmer 2009). As a result, establishing a private sector working with the market mechanism philosophy will be weak.

The above-mentioned analysis shows that the adjustment toward the free market economy in the GCC countries has a high cost. The governments of the region are trying to achieve their goals with the minimum cost. The new solution guarantees that the government will stay the most influential player in the economy, and by which can secure the regime.

6. Summary And Conclusions

The GCC countries rely heavily on the hydrocarbon sector as a primary source of income. High population growth rate, economic growth rate, low domestic energy prices, and water desalination have motivated the high energy consumption in the region. The data proves the enormous energy consumption and CO₂ emission per capita of the region. Meanwhile, the oil revenues contribute positively to economic development and public welfare in the GCC countries. The quantitative studies acknowledge the importance of energy consumption to the GCC economy. They also confirm significant connections between energy consumption, economic growth, CO₂ emissions, and environmental stress. These findings display a significant tradeoff between economic growth and a clean environment.

Therefore, we review three core governments' policies in this research area. First, institutional arrangements to protect the environment. Second, economic diversification policy to enhance the private sector's contribution to the economy. Third, energy price reforms. These policies are vital because they play a significant role in creating a balance between achieving permanent economic growth and preserve the environment. Our analysis shows that the GCC countries' institutional actions were not enough to generate adequate environmental protection. The GCC economies remain strongly influenced by oil and gas price fluctuations, and the diversification achievements are weak. Moreover, the GCC governments adopt comprehensive fiscal reforms, including energy price reforms, to support the governments' budget and restrict energy consumption. Nevertheless, there are several concerns about this policy.

Besides, we find many challenges that influenced the GCC economies during the steps to enhance the SCP. The major challenge is the role of the government in the economy. The GCC governments are building their hybrid private sector under the concept of entrepreneurial state capitalist. Under this new concept, the governments formulate, regulate, and dominate the private sector to secure the regimes.

Declarations

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Figures

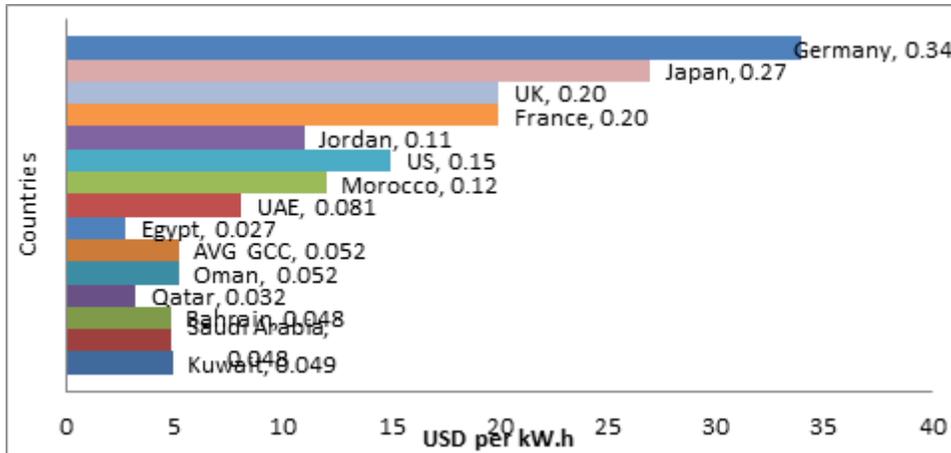


Figure 1

Prices of electricity in the GCC and other countries (USD per kW. h), 2019 Source: The global economy website.

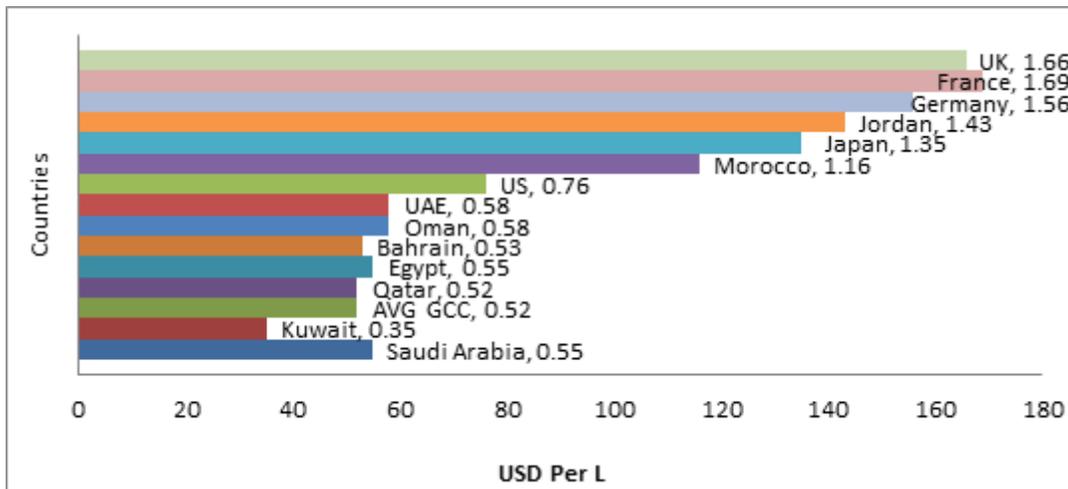


Figure 2

Pump prices for gasoline in the GCC and other countries (USD per L), 2019 Source: The global economy website.

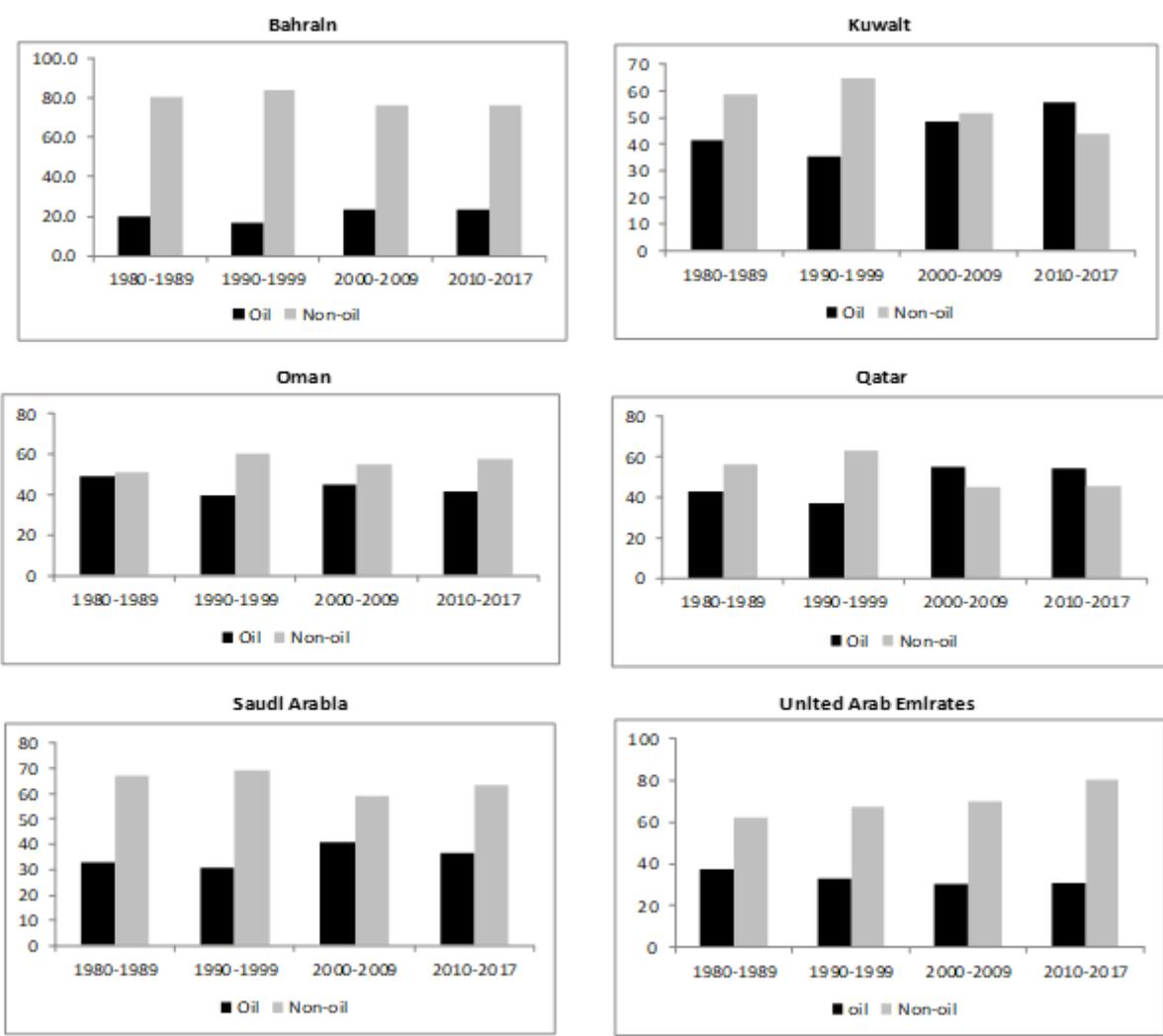


Figure 3

The share of oil and non-oil sectors to GDP of the GCC countries Source: The national accounts for each country and Quandl website.

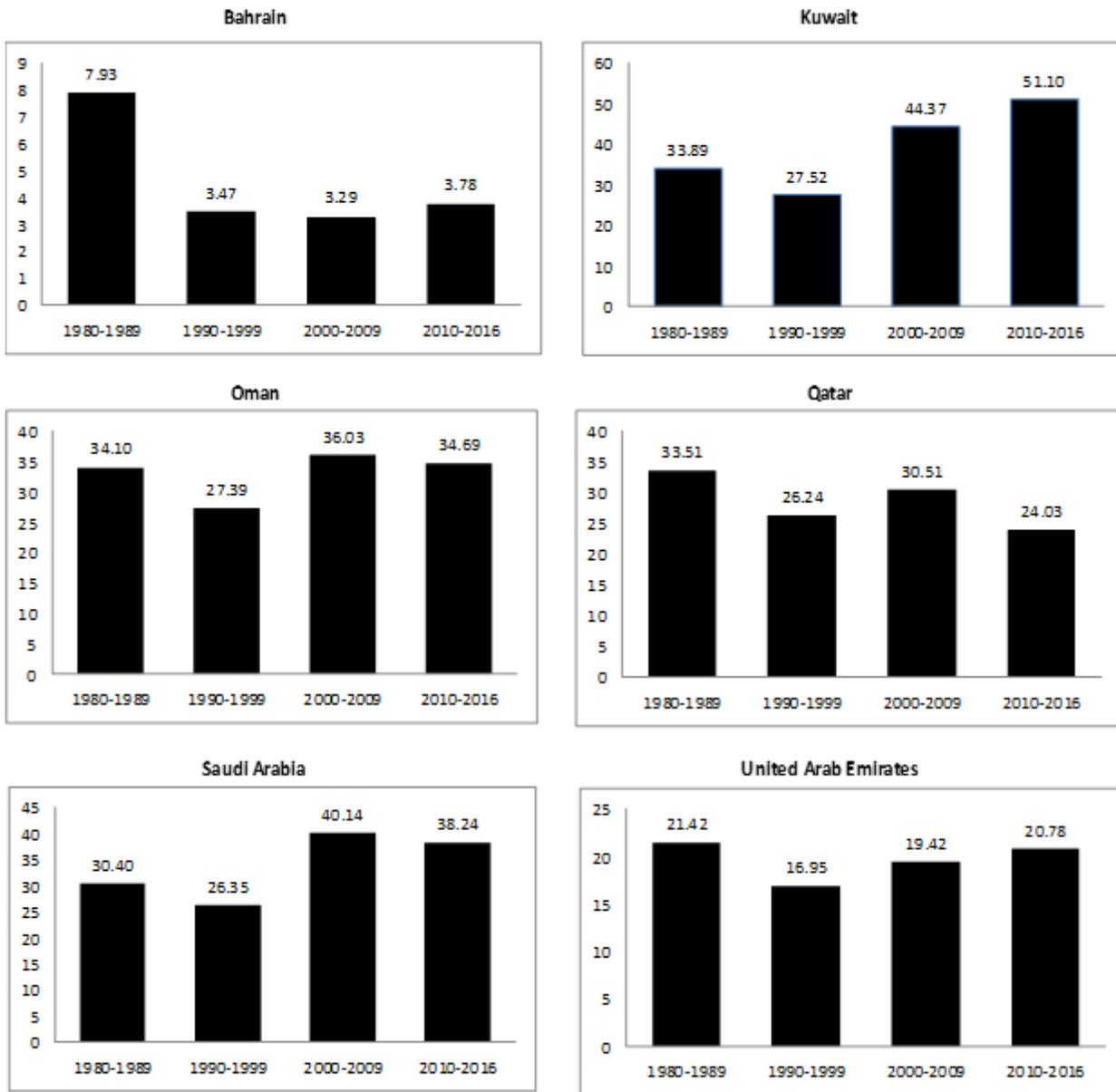


Figure 4

the relative importance of oil and gas revenues to GDP of the GCC countries during the period (1980-2016) Source: The global economy web site.

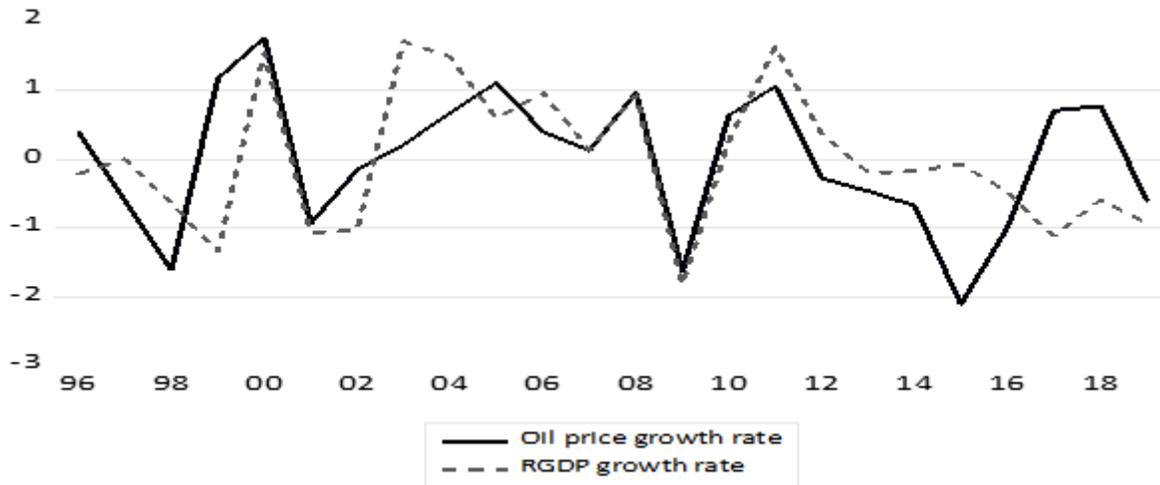


Figure 5

GCC RGDP growth rate and oil price growth rate during the period (1995-2019) Source: World Bank Development Indicators Via the Data Stream.

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
Value add tax of 5%					✓	✓
Excise taxes	✓				✓	✓
Electricity and water tariff	✓	✓	✓	✓	✓	✓
Transportation fuel prices (tax)	✓	✓	✓	✓	✓	✓

Figure 6

Summary of major fiscal reforms across the GCC countries Source: Young (2018).