

Natural Resources: Can the Oil and Gas Industry Continue to Support Further Economic Development?

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Abstract: Oil and gas have been the main contributor to the economic development in the Middle East, North Africa and various other regions. In the face of increased concerns regarding the use of oil and gas, there is a need to understand whether relying on these natural resources, for further economic development, is sustainable, or not. By reviewing the existing literature and providing a descriptive analysis of the oil and gas market, the aim of this paper is to explain the existing problems for the future of the oil and gas industry. After the introduction and the methodology, there is a literature review section, the analysis of oil and gas market in the world, and then the examination of the recent sanctions on oil and gas and their economic impacts. Finally, the authors discuss the main problems related to oil and gas. A major finding found, as a result of our study, is that due to the volatile market prices, high sensitivity to external factors, transition to renewable energy resources, possible damages to demand and the underdevelopment of non-energy sectors and human capital, the non-renewable, resource-based, natural sustainable development, is not possible to achieve in the near future. Our conclusion is that while non-renewable energy resources have been the driver of economic growth in many countries, the problems related to their usage and many external factors that can lead to a decrease in demand for oil and gas, means that it will not be possible to achieve sustainable development through the oil and gas industry, in the future.

Keywords: economic growth; export; gas market; GDP; natural resources; oil and gas sector

1 Introduction

Natural resources are different types of materials that exist in the lands of the country which have their own value in the international market. The existence of natural resources within the country can have both positive and negative impacts on the economy. Historically, natural resources have always been regarded as a blessing for a country as the government can export its natural resources to generate government revenue [1]. However, it has become clear that the impact of natural resources on the economy depends on many different economic and political factors existing in the country [2]. The exploitation, production, and supply of natural resources should be done in a way that will benefit the whole population of the country including future generations.

As a result of the negative impact of non-renewable energy resources on the environment and the expected depletion of these resources in the future, it is needed to move to renewable energy resources from non-renewable ones to be able to fulfill the energy demand when trying to achieve sustainable development. While the move of renewable energy resources is on the agenda of the world and many governments, it is not clear how this strategy will affect the development of resource-rich countries. Even if the world is trying to transform its energy use from non-renewable to renewable energy sources, there will still be a need for oil and gas as the transformation process and development of necessary technology itself needs oil and gas as a source of energy [3].

Oil and gas market faces many different challenges which risk the development of countries and companies that have oil and gas-based economies [4]. Coal and gas energy assists in development when its share is small, while over-consumption hampers development [5]. This paper will elaborate on different features of the oil and gas market, ongoing trends in the world, and the structure of the economies of oil and gas-supplying countries to understand whether these countries will be able to continue to grow economically by using their natural resources.

There are growing concerns regarding the compatibility of the oil and gas industry in a sustainable future [6]. Sustainability is a critical issue for resource-rich countries [7]. Many oil and gas-rich countries became high-income economies as they generated high levels of export revenues. The reason behind this development and increased demand for oil and gas has been the fact that the development of the current industrial world needs fuel to generate energy for its processes [8]. However, this brings questions regarding the sustainability of resource-based economic development.

Non-renewable energy resource use is not relevant to the concept of sustainable development as it can lead to the depletion of resources that are currently existing and damage the environment which will affect the living standards of the population negatively. In the case of oil and gas-rich countries, even if one disregards the negative environmental impact, the depletion of resources is likely to cause a drop

in the economic growth rate. There is a need to clarify the impact of this depletion in the near future and understand if it is possible to avoid the potential decrease in economic growth rate when oil and gas resources are still available.

This paper aims to identify the possibilities for natural resources to further support economic growth in the case of oil and gas. In this paper authors re-evaluated the idea that the state of the business cycle can be determined based on the comovements of macroeconomic indicators. The importance of our paper that the literature review lacks such a study which examines the problems related to oil and gas from sustainable development perspective. Firstly, a review of the existing literature on the economic growth trends in oil and gas-rich countries will be provided. By examining the existing literature, the aim is to present comprehensive evidence and analysis of the impact of oil and gas resources on economic development. The paper continues with a review of the oil and gas market where supply, demand, and price dynamics in the international market are discussed. As a next step, the analysis of sanctions on oil and gas and their economic implications are provided. Finally, the authors discuss the problems related to oil and gas and their implications for oil and gas exporter countries.

The generation of huge government revenues, from the export of oil and gas and the improper use of the generated revenue, is a risk for future generations, as they will not be able to benefit from the same resources, as the current generations. This study criticizes the current policies of governments and draws attention to the importance of sustainability in the oil and gas sectors.

2 Methodology of Research

This study is based primarily on international and next on bibliography and databases, founded on the descriptive-analytical exploration of concrete economic, social and technological factors, which could be seen in the background of this complex relationship. In addition, a mention should be made, that one of the authors worked several years in this sector. Therefore, the on-site, personal experiences of the author have also contributed to the results of this work.

3 Literature Review

Natural resources are one of the main determinants of the economic growth rate [9]. By exporting the natural resources existing in their lands, countries get enormous sums of money to build their economies. In contrast to this argument, it can be found that there is a negative correlation between the economic growth rate, measured by per capita GDP growth rate and natural resource exports of the country, measured

by the ratio of natural resource exports to GDP [1]. The economy needs to heavily use its natural resources to be able to achieve economic growth, in the case of a low level of innovation rate [10]. However, the author also mentions the importance of investing the returns from the use of natural resources, to support the innovation of the economy. Then, the question arises why resource-rich countries around the world are not the leaders of innovation. Other authors attempted to answer this question by providing social, political, and economic explanations [1]. While social explanation focuses on the idea that the high-level development of the industry in countries which does not have natural resources is related to the need for this development as there are no other source of exports exist, political explanation focuses on the fact that the revenue from natural resources is not effectively invested in other sectors of the economy but captured by high-level governmental officials instead. An author supports the political claims by mentioning the importance of the characteristics of governance in economic development [12]. The Author mentions that it is not natural resources that causes a lower level of economic growth for resource abundant countries, compared to others but the governments which do not manage the return on natural resources to support the economy as a whole.

As an economic explanation, a paper presents the theory of Dutch disease [1]. The literature on ‘Dutch disease’ in developing and emerging countries is rich [14]. Dutch disease theory suggests the idea that when a specific sector in the economy generates a high level of export revenue and causes an appreciation of the national currency, other sectors of the economy face a decrease in exports as these products are more expensive in the international market [13] [14]. Also, the investment within the country also flows to the booming sector of the economy which again constitutes to the lack of attention to other sectors of the economy. According to publicly available data, the existence of natural resources can affect the economy both in positive and negative ways and can lead to the net zero impact at the end [15]. Natural resources are not expected to be depleted in the near future, but due to the lack of availability and increasing costs of exploitation, the prices will jump substantially which will negatively affect the economic growth of the countries which have based their economies on natural resources [16]. The existing research suggests that the profitability of the non-renewable energy resources will decrease in the future because of the fact that the highest quality and easily accessible portion of these resources has started to be extracted first [17]. As the difficulty of accessibility increases, the costs related to the exploitation will increase which will result in lower profits from non-renewable natural resources. It is not possible to achieve sustainable economic growth only through the export of exploited natural resources [18].

There is a need to strengthen an economy through different types of investments either to different sectors of the economy or to the physical and human capital. The lack of quality in the human capital is among the reasons for poorer economic growth in resource-rich countries as governments fail to address the diversification

in the skills of the labor force [1]. Economies should at least be able to process the natural resources extracted to some degree instead of just exporting the raw natural resources [18]. In this way, the country will be able to add value and differentiate its products in the international market and contribute to the domestic economy also by decreasing the dependence on imports of processed natural resources which is already existing in the country.

It is not possible to achieve sustainable development by basing the economic growth on non-renewable energy resources because they will deplete at some point in the future [19]. Considering the attempts to switch from non-renewable energy resources to renewable energy resources because of many different reasons including the negative environmental impact of oil and gas and the fact that they will deplete in the future, the demand for the non-renewable natural resources is likely to decrease in the coming years. According to publicly research results, it is possible to achieve sustainable economic growth through the use of renewable energy resources instead of using non-renewable energy resources and harming the environment [20]. According to other authors, the usage of non-renewable energy resources is associated with a statistically significant economic growth in all European countries [8]. Considering the fact that non-renewable energy resources are the main type of fuel used in manufacturing in Europe, the study is proof that resource-rich, especially oil and gas rich countries can benefit from these resources more if they also develop manufacturing sectors of their economies. These countries can even generate higher profitability ratios from manufacturing as there will be much lower costs of energy compared to European countries.

3.1 The Review of the Oil and Gas Markets

Oil and gas are the most commonly used natural resources in the world currently. Non-renewable energy resources, in general, including oil and gas, do not need advanced technologies to generate energy, which make them the easiest option to be used for industry. From Figure 1 below, it is easy to understand that the energy use per capita has always been increasing since the 1970s on average in the World while the pattern is fluctuating for the OECD average [21]. However, the average energy use per capita is higher in OECD countries compared to the world average due to the higher levels of industrialization and more developed infrastructure that is in need for energy in OECD countries. Also, the graph on the bottom of Figure 1 shows that more than 80% of the energy consumption of OECD members and overall world is generated from fossil fuels, while there has been a decrease since 1972. This shows that the world is still dependent on non-renewable energy resources, as the main source of energy, which is not sustainable.

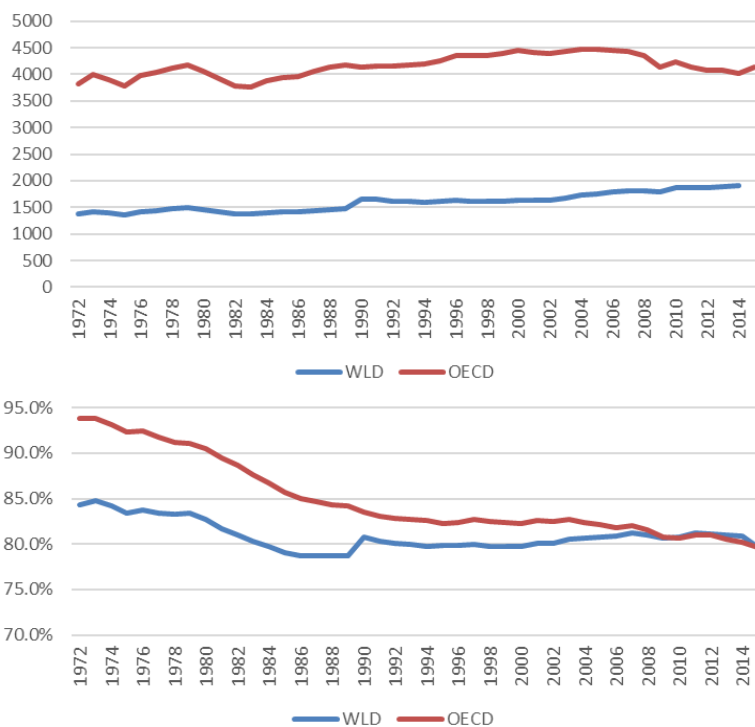


Figure 1

Energy consumption per capita as kg equivalent of oil and fossil fuel energy consumption as a percentage of total energy consumption for world and OECD

Source: [21]

The United States of America, Saudi Arabia, and Russia lead the production of crude oil in 2021 as these three countries together accounted for 42.5% of the total production [22]. The United States, Russia, Iran, China, and Qatar have been the main producers of natural gas in 2020 [23]. Many countries generated high levels of government revenue from oil and gas exports including Arab countries, Iran, North African countries and others. Oil and gas market has an oligopolistic structure and the members of the oligopoly are able to manipulate prices by affecting the supply. The Organization of Petroleum Exporting Countries (OPEC) includes main oil rich countries over the world which are able to increase and decrease supply of oil to manipulate the market. More than 80% of proven oil reserves in the world is located in OPEC countries [24]. The power of OPEC is one of the factors that contributes to the volatility of oil prices [25]. Figure 2 represents the weekly price of crude oil over the period between January 1996 and April 2022 [26].

The ups and downs of oil prices are easily observable in Figure 2 which means that crude oil prices are highly volatile. Therefore, heavy dependence on oil and gas can lead to the booms and busts in the economy of countries that have these resources.

Volatility of crude oil prices is an economical problem for both importers and exporters of these natural resources [27]. The extremes of crude oil and gas prices shown in Figure 2 and Figure 3, show that there will be periods, when resource abundant countries, will receive huge amounts of foreign exchange inflow and periods when the amount of this inflow will be substantially lower [28].

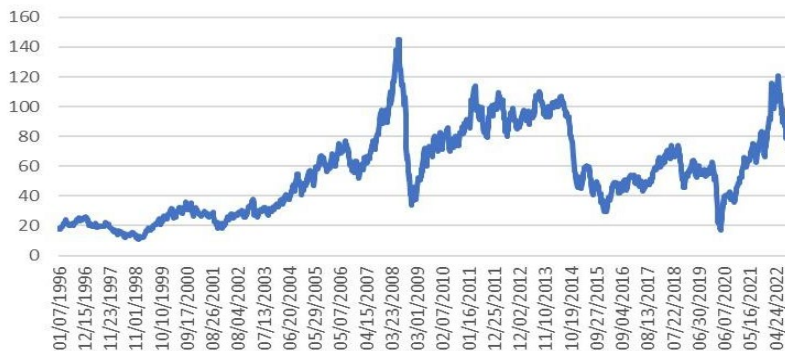


Figure 2

Weekly crude oil price between 1996 and 2022 (USD)

Source: [28]

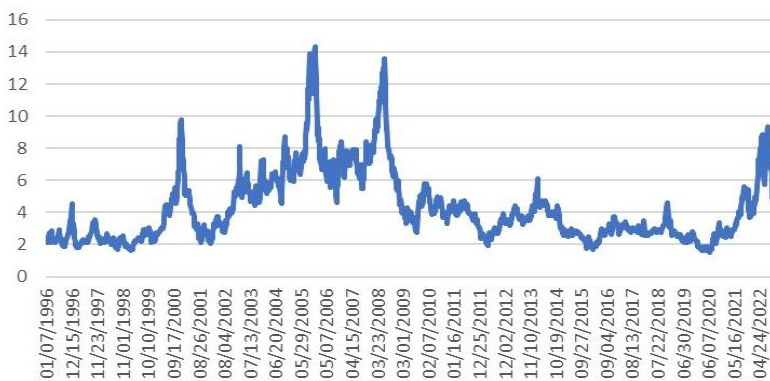


Figure 3

Weekly gas price between 1996 and 2022 (USD)

Source: [21]

Europe has faced extreme hikes in gas prices as a result of the political instabilities which led to the decrease in the supply of oil and gas from Russia. The International Energy Agency (IEA) predicts that while demand for gas will continue to decrease in Europe, it will continue to increase gradually in Asia [29]. Figure 4 represents the oil rents as a percent of GDP for the five main oil supplier countries based on the data extracted from databank of [21]. Figure 4 shows the fact that the USA and

Canada have a lower share of oil revenues as a percent of their GDP. This is because the USA and Canada have a more diversified economy, with a developed industry, which is also in need of oil, as a fuel. Therefore, oil is not exported, but used mostly within the country.

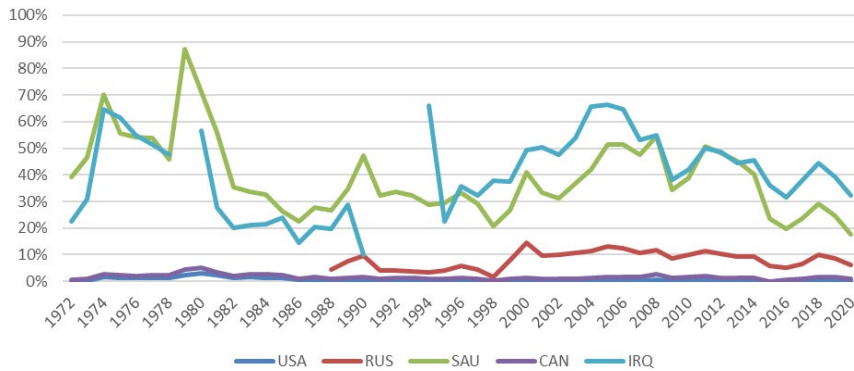


Figure 4

Oil rents as a percentage of GDP for the USA, Russia, Saudi Arabia, Canada, and Iraq

Source: [21]

However, for Saudi Arabia, Iraq, and Russia, oil revenues contribute significantly to GDP, as oil is mainly exported. The asymmetric impact of oil supply and demand shocks is significant in Pakistan [30]. According to publicly available data, while the USA was the main crude oil producer country, Saudi Arabia was the main oil exporter country in 2021 [31]. Iraq produces more than 4 million barrels of oil per day [32]. The case is similar for natural gas revenue as developed countries have lower levels of revenue from natural gas as a percent of GDP because of the lower level of exports and more diversified economy. However, overall, oil contributes GDP more in resource rich countries compared to natural gas.

3.2 Oil and Gas as a Driver of Economic Development

The reason for oil and gas rich countries' economic growth was the use of oil and gas as an energy input in the industry and manufacturing [33]. While it is observed that oil and gas rich countries faced with high levels of GDP growth rates, improvements in infrastructure, and increased inflow of foreign direct investment (FDI), but instead of a direct effect on economic growth, oil and gas revenues should be used for the development of economy as a whole by investments in different sectors which will lead economic diversification [34].

The diversification level of an economy can be understood from the structure of its export's portfolio. The trends of fuel exports, high-technology exports, and manufactured exports of the country for four developing oil exporting countries are represented in Figure 5 [21].

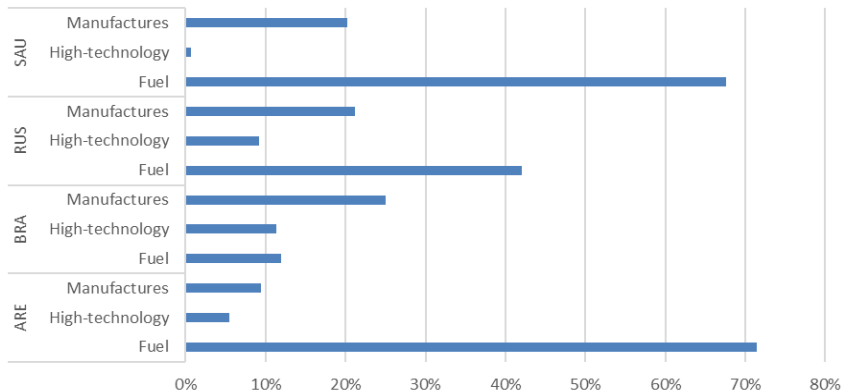


Figure 5

Fuel exports as a percentage of total merchandise exports, manufacturing exports as a percentage of total exports, and high-technology exports as a percentage of manufacturing exports for Saudi Arabia, Russia, Brazil, and United Arab Emirates

Source: [21]

As represented in Figure 5, for all four countries, most of the exports of the country is fuel exports. Only a small portion of the exports are manufactured exports, while high technology exports are the smallest part of manufacturing exports. In the case of Brazil, the share of manufactured goods and high technology products are decreasing in the export portfolio of Brazil while the share of fuel exports is increasing according to World Development Indicators [21]. It is a sign of the start of natural resource dependency of the economy and needs to be addressed. The beginning of oil production in the country affected the other sectors of economy negatively and non-oil and agricultural exports of Ghana decreased because of the stronger foreign exchange rate which makes goods and services more expensive in the international market compared to before [35]. Another author mentions the fact that while oil revenues have contributed to the economic development of the Arab world since now, the region failed to improve its non-oil sector which also causes employment issues for the population [36].

According to publicly empirical analysis for the period between 1997 and 2015 reveals the fact that there is a positive correlation between oil prices and GDP growth rate for the Caspian Sea region [37]. This finding has two main implications:

- Oil rich countries' economic growth rate will depend on the supply and demand dynamics in the market.
- Considering the fact that oil prices are highly volatile, the economy of these countries will also be highly volatile.

Other authors impact of oil prices on GDP depends on the level of growth rate and in the case of South Africa, the higher oil prices lead to lower GDP growth rates [38]. The Markov chain method is important because this allows to analyze the

unobservable variable in greater detail. Other author mentions the fact that since Ghana's oil resources were found and crude oil production started, the economy started to grow and the currency of Ghana started to appreciate based on the empirical data analysis [35]. However, for the case of Nigeria, the existence of oil and gas causes an attraction of FDI which also brings new technology to the country [34]. The main issue here is to be able to attract FDI and consequently, new technology, to also non-oil sectors of the economy. Another research study provides a clear picture of the relationship among biomass consumption, oil prices, and GDP growth, providing useful insights for policymakers, government, decision-makers, and energy sectors to consolidate the energy system in South Asian countries.

3.3 Recent Sanctions on Oil and Gas and Their Economic Impact

The ongoing war in Ukraine brought many economic challenges with itself. To prevent the aggressive behavior of the Russian government in Europe, different countries adopted sanctions towards Russia. This opened up discussions on the possible impact of sanctions on the global economy. As oil and gas exports are one of the main sources of government revenue for Russia, USA and European countries put limits on the number of Russian imports, mainly oil, gas, and coal imports [39]. However, the sanctions are not likely to affect only the Russian economy as market prices for oil, gas, and coal should also be expected to increase because of the sanctions.

The sales of goods and services between different countries or between businesses from different countries is international trade. Because of the many different participants involved, international trade can be explained by network theory which explains international trade as a creation and maintenance of connection with the representatives of different countries in the world market [40].

It is important for sanctions to have three important characteristics to be successful according to the network theory [41]:

- First, the applicant of the sanction should have more information than the party which receives the sanction. When applied to the case of energy sanctions on Russia, it is not clear if this information asymmetry exists. Because the fuel market, especially oil and gas, have many strong participants and almost all information regarding the reserves, production level, price level and others are easily accessible, it is not possible to have a big information asymmetry in the case of energy sanctions.
- The second important feature is the length of the sanctions. When sanctions are applied for a longer period of time, the receiver party will be able to adjust its policy accordingly which will decrease the benefits of sanctions for the applicant. The possible length of sanctions applied to the Russian economy may depend on many different factors considering the fact that the war is still

ongoing. If the sanctions on Russia are not removed at the right time, the European population will continue to suffer from extreme high energy prices while Russia will already start to fulfill demand from other parts of the market.

- The final feature is that it is better to have unilateral sanctions instead of multilateral which means that sanctions are better when they are applied by a unit party to avoid any miscommunication within the network. Sanctions on Russia are done by many different parties separately as the limits on energy imports from Russia are different for different countries.

One of the important features of international trade is the participants' possibilities to increase their power when explained by network theory [42]. In the case of the oil and gas market, the sanction on Russia caused an increase in the level of prices for fuel. This is because of the fact that the manufacturing industry all over the world is still in need of fuel as a source of energy despite the commitment from the world to switch to renewable energy sources. The limit on fuel imports from Russia decreases the supply of oil which moves the market price for fuel to an upper level. Therefore, the international market for fuel gives the possibility to its participants to increase their power in case of sanctions.

Another issue is the fact that while sanctions are imposed by the applicants to make some countries change the direction of their policy, it can also make the sanctioned country's economy even stronger. In the case of Russia, the war with Ukraine is not the only case that country is sanctioned. Russia has faced import sanctions throughout history by the USA and Europe. While the aim of these sanctions is to decrease the power and competitiveness of the sanctioned country in the market, this country will also try to find effective policies to prevent the negative impact on its economy [43]. Russia already sells its oil for lower than market prices to keep its competitiveness in the market, but to avoid the loss of revenue, the country will need to advance its production processes for the future. These advancements means that, in case of need, the next sanctions package in the future will not be effective. Russia is also expanding its relationships with other countries, which is another threat according to the network theory of international relations as Russia will be more independent of the USA and Europe to sustain its economic growth.

Overall, all types of sanctions are likely to decrease the economic development of the global economy. In the case of sanctions in the fuel market, the negative impact on economic development is more significant because of the impact of them on the whole industry as a source of energy. According to publicly available forecasted, a decrease of 3% in GDP growth rate in 2022 and further 0.5% in 2023 compared to 2021 which is highly impacted by the existing sanctions on Russian non-renewable energy resources [44].

3.4 Problems Related to Oil and Gas

One of the main problems in the oil and gas market is the heavy dependence of the supply, demand, and consequently, price patterns on political issues [33]. The war between Russia and Ukraine is a good example of how politics can affect the oil market. While Russia faced low demand, other oil and gas rich countries needed to supply more than before. Both of the situations are not easily manageable. While it can seem like extreme high oil prices are good for oil and gas producers, as explained in the beginning of the paper, it is actually not the case. While direct oil and gas revenue may increase, it can affect the overall economy negatively because of the appreciation of currency and lower foreign demand and investment for other sectors of the economy.

Uncertainty in oil and gas prices is one of the main problems faced by both supply and demand sides. As discussed in the beginning of the paper, oil and gas prices are highly volatile and a number of factors can lead to the increase and decrease in oil prices. Therefore, it is not secure to base the development of the economy on the oil and gas sector only. A good example is the case of Azerbaijan for 2015. One main reason for the devaluation of the Azerbaijani Manat, was the decrease in oil revenue [45]. While the export of Azerbaijani oil decreased, the issue was magnified by the decreasing oil prices. The government lost its foreign exchange reserves, to keep the exchange rate fixed, which was not successful. The economy faced high inflation and decrease in the purchasing power of the population.

While oil and gas are effective sources of energy and very popular in the international market, oil and gas reserves will be depleted in the future and they are non-renewable. The production of oil from high-quality oil reserves has already decreased because of the depletion and switching to other low-quality oil reserves are not effective. There are two main reasons [46]:

- The first, extracting oil from low-quality oil reserves is costly because of the technology and time needed.
- The second is the fact that switching to low-quality oil reserves will harm the environment even more than current damage.

Another literature mentions the need for investment in the Middle-East to avoid shortage in the supply of oil in the near future [47]. However, the author also mentions that even if the investments are made the oil reserves will be depleted soon but it is not possible to mention an exact date as Middle-Eastern countries do not provide clear information about their oil reserves.

The negative impact of fossil fuels on the environment and its contribution to global warming and climate change started frequent discussion and implementation of policies to switch to renewable energy resources. More than half of the CO₂ emissions are stemming from energy use [48]. Consumers are also becoming more aware about environmental issues and environmental impact of the suppliers also

affecting their purchasing decisions. To keep up with the customers' expectations and protect their competitiveness in the market, businesses also try to decrease their negative environmental impact. Decreasing the usage of fossil fuels as a source of energy and using renewable energy is an important step to achieve this goal. However, the process of switching to renewable energy resources is not straightforward from both technological and policy perspectives. The transition process should be fair to all parties of the society considering the fact that living and employment conditions of many people will be affected [49]. Despite the challenges, the transition is on the agenda and it has already started to happen... gradually.

Figure 6 shows the dynamics of renewable energy consumption as a percentage of total energy consumption for OECD countries [21]. While the numbers are still small, it has increased over the time and further increase will happen. Consequently, the demand for oil and gas as a source of energy will decrease which is a threat for countries that base their economies on oil and gas production and export.

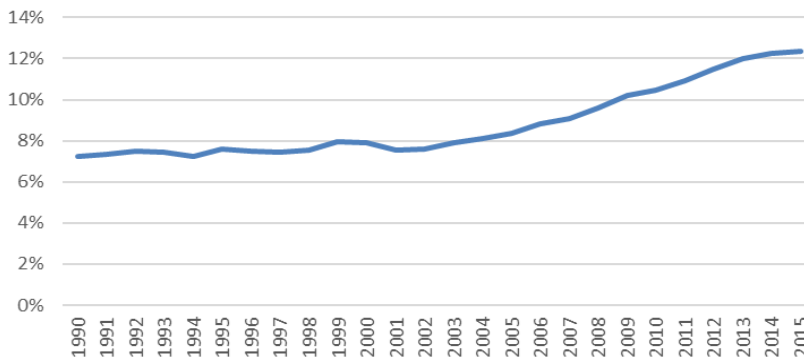


Figure 6

Renewable energy consumption as a percentage of total energy consumption for OECD countries

Source: [21]

As a result of the negative environmental impact of fossil fuels, the world is urged to adopt the usage of renewable energy sources. However, the development of technology that decreases or removes the pollution and emissions from fossil fuel usage can create the possibility to continue the usage of oil and gas without any harm to the environment. The problem related to this solution is about the costly nature of developing this technology. However, even if the necessary technologies are adopted, there is no guarantee that the emissions will be stored properly [33].

According to publicly available forecasted, next problem is related to the possible decrease in world GDP for 2022 and 2023 [44]. The lower level of income for the world population means a lower level of energy use because of many different reasons both directly and indirectly. To exemplify the indirect effects, lower income level means that people will have less money to spend on goods and services they

were consuming before and this will decrease production. Lower level of production will lead to the decreased demand for energy and in turn, lower demand for oil and gas.

Changing the strategies and policies based on the demands of society is not an easy and costly process. While the society demands for social responsibility from oil and gas producers and suppliers, it is a challenging process to decide and implement strategies to align with the society's expectations. Oil and gas businesses need to adjust their strategy in a way that they will be able to operate in the future [50]. The dependence of the economy on the oil and gas sector also has its implications for human resources [51] [52]. Oil and gas sector does not create enough jobs directly which means that basing the economy only on this sector may lead to unemployment [36]. The human resources working in the oil and gas industry mostly are not high-quality human capital [1]. Therefore, there is a need for the development of other sectors of the economy and improvements in the human capital accordingly.

Overall, the generation of huge government revenue from the exportation of oil and gas and improper use of the generated revenue is a risk for future generations as they will not be able to benefit from the same resources as current generations do. The governments of oil and gas rich countries should invest the money generated from the oil and gas sector properly to make future generations able to benefit from them too. However, as oil and gas will be depleted in the future and non-oil sectors of oil rich countries are not well developed, future generations will suffer for employment and purchasing power in the international market.

Conclusions

Natural resources, especially oil and gas, have been the main contributors of economic development for a number of countries. The analysis done in this work showed that the export portfolio of the main oil and gas exporter countries, is mainly based on the oil and gas industry, while other sectors of the economy remain underdeveloped. Oil rents constitute a considerable part of GDP in these countries and if we consider the indirect impact of the oil and gas industry on GDP, it will become even larger. While most of the benefit from natural resource revenues can be generated through the effective investment policies of the government to diversify the economy, most resource rich countries failed to adopt this strategy.

The review of the oil and gas market presented in this study shows that the main oil exporters countries do not have diversified export portfolios. Oil and gas markets face high levels of price volatility. The market is also highly responsive to geopolitics. As supplier and demand countries of oil and gas have different political strategies, the sanctions on oil and gas are frequently used as an attempt to impact political behavior. This, in turn, affects the demand, supply, and price level. As oil and gas are the main source of energy for industrial production, changes in supply and demand affects the global economy significantly.

In addition to the high volatility of oil and gas prices, the fact that these resources will be depleted sometime in the future, means that even if there is a demand in the market, current resource rich countries will not be able to meet the demand. Therefore, the revenue from oil and gas will disappear, at some point in the future.

The negative impact of oil and gas on the environment causes increasing concerns regarding the use of them as a source of energy. To be able to achieve sustainable development, the world is trying to switch from non-renewable to renewable energy sources to decrease the negative impact on the environment and to ensure that the consistent growth will also continue in the future for the next generations. The technology to decrease the emissions, from oil and gas usage, is costly and difficult to ensure 100% quality, which makes it almost impossible to eliminate the emissions from their use.

The world economy is highly vulnerable to many different external factors. The Covid-19 pandemic and resulting lockdowns, caused a huge decline in consumption and people started to save. The war between Russia and Ukraine also had a similar effect. Therefore, it is not possible to estimate the future income level and consequently, future demand for oil and gas. All these possible scenarios lead to the similar conclusion, that future generations, in oil and gas rich countries, will not be able to benefit from these resources.

To conclude, while non-renewable energy resources have been the driver of economic growth in many countries, the problems related to their usage and many external factors that can lead to a decrease in demand for oil and gas means that it will not be possible to achieve sustainable development through the oil and gas industry in the future.

Consequently, instead, Governments should develop policies to use the oil and gas revenues in an effective way, that will lead to improvements for all sectors of the economy and the development of local Human Capital. In this way, the future generations will benefit from current, extensive government revenues derived from oil and gas.

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