

# Reflection on Global and GCC Energy transition Pre and Post Covid 19

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## ABSTRACT

The pandemic of COVID-19 was a major challenge for most governments and countries around the world. Facing the consequences of the outbreak delayed a lot of planned development. Furthermore, it had a major effect on the energy sector where it caused a massive decline in demand for transportation as well as industrial and commercial energy use. This research reflects on the global and GCC energy transition before and after the COVID-19 pandemic. It draws a general understanding of some outcomes of the pandemic in the energy sector at the global and local levels.

**Keywords:** Energy transition, GCC, COVID-19, Energy Mix, Energy Planning, Sustainability.

## NONMENCLATURE

### Abbreviations

GCC	Gulf Cooperation Council
IRENA	International renewable energy agency
EU	European Union
MENA	Middle East and North Africa

## 1. INTRODUCTION

Energy transition is a fundamental and long-lasting change in energy mix, supply, and demand when a new source of energy emerges. Reflecting on the second half of this century, International Renewable Energy Agency (IRENA) defines energy transition as a transformation of the global energy sector from fossil-based to zero-carbon [1]. The enablers of this transition are not limited to intelligent technology, policy structures, and market tools [2]. With the 0.03°C per year increase in the global temperature in the last 25 years, the speed for sustainable energy transition has become a must to reduce CO<sub>2</sub> emissions produced by the energy sector.

Not only that, but by the year 2050, it is expected that energy transition will help in generating 42 million jobs in renewables globally [3]. The tremendous effort for a green transition has faced some obstacles like regulatory challenges in decentralization and digitalization as well as other challenges in economic and finance [4].

In the spring of 2020, the impact of the COVID-19 crisis registered at a global level with a 3.8 percent decline in global energy demand. Numerous research tackled the effect of the pandemic on several sectors like health, the economy [5], policies [6], [7], and energy [8]. One research study offered a guideline to face the crisis by responding based on the time horizon and the arising challenge [6]. Another investigation focused on studying electricity demand patterns and behavioral change in energy use during the pandemic [9]. And another study focused on the crisis effect on the global decarbonization effort.

The reason for this paper is the lack of research on the impact of COVID-19 on GCC energy transition. Therefore, the goal of this research is to reflect on the effect of COVID-19 on the global and GCC energy transition. This research will highlight some milestones the region had during the pandemic, and it will help in planning for sustainable transition in the future. Section 2 of this paper provides a highlight of the global energy transition pre- and post-COVID-19 while Section 3 focuses on GCC countries. Section 5 draws conclusions.

## 2. GLOBAL ENERGY TRANSITION PRE AND POST COVID-19

In Europe in 2020, comprehensive new policy frameworks targeting carbon were expected to be implemented in detail like the “European Green Deal” and climate law frameworks on the national level. In the United States (US), some climate policy packages were introduced, and the Green New Deal was proposed [6]. In China, non-fossil fuel contributed to 16 percent of the country energy mix for the year 2020 with some

discussion regarding decarbonization actions in the next five years. In the energy sector level, low-carbon technology was playing a significant role in competing against conventional energy sources in terms of cost [8].

By spring of 2020, a global public health emergency was announced with the uncontrollable spread of the COVID-19 virus around the world. European economic analysts forecasted the worst recession since the Great Depression along with increases in the unemployment rate and enormous uncertainty of the economy [10]. Low export demand and the change in consumer behavior were noticeable. During all of this, the situation was characterized by uncertainty on the depth and duration of the crises with its implication on all sectors [11].

Table 1: Overview of percentage increase and decline in global energy consumption, green gas emission, and share of renewable energy for years 2020 and 2021 [12], [13].

	2020	2021
Global energy consumption	-10%	+4.1%
CO <sub>2</sub> emissions	-5.2%	+5%
Share of renewables in global electricity generation	+9%	+8%

Table 1 shows a decline in global energy consumption for the year 2020 compared to the previous year, by 10 percent and by 5.2 percent for CO<sub>2</sub> emission. These declined due to the lockdowns affecting most economic sectors like transportation, air travel, and business activities. Oil use for aviation and road transport is below 2019 levels, and it is expected to remain like this until 2022. This affects CO<sub>2</sub> emissions enormously. In 2021, global energy consumption and CO<sub>2</sub> emissions increased by 4.1 percent and 5 percent with the expectation for global energy-related and CO<sub>2</sub> emissions to achieve their second-largest annual increase ever. On the other hand, the share of renewable in global electricity generation during the pandemic increased by 9 percent compared to the year 2019 and by 8 percent for the year 2021. It is expected that China will be a driving force in increasing renewable electricity for year 2021, followed by the US and EU [13].

In UK and Europe, the short- and long-term needs are well aligned, even at the highest level. They look at the economic improvement plans after COVID-19 and decarbonization as they are very closely related. Their focus is not on whether the pandemic delayed the

sustainable energy transition, but if recovery plans are accelerating it [14]. China is looking to diversify the energy mix with 40 percent from nuclear and 4 percent from non-fossil fuel sources. Moreover, their goals extended to an 18 percent reduction in carbon emissions by 2025.

In the second quarter of 2021, the pandemic continues to delay restrictions on movement and aviation and continues to limit global energy demand. A return to normal situation is likely to occur with many countries around the world that run huge vaccine campaigns and stimulus packages.

### 3. GCC ENERGY TRANSITION PRE AND POST COVID-19

The international renewable energy agency predicts an 8 percent reduction in the carbon footprint of the GCC in 2030, while almost USD \$71 billion is projected to be invested in renewables in the MENA region between 2019 to 2023 [15]. Governments in GCC remain committed to their green agenda by increasing renewable energy and energy efficiency plans, often integrated in national energy and climate strategies [2]. Moreover, they expand the investment in non-conventional sources of energy. The leading countries in this effort are UAE, KSA, and Oman (see Table 2).

Table 2: Percentage of renewables in energy mix for GCC countries with target year for achievement [15].

Countries	Percentage of Renewable Energy Mix in	Target year
Bahrain	10%	2035
Kuwait	15%	2030
Oman	11%	2023
	30%	2030
KSA	40% (solar)	2030
UAE	44%	2050

Green transition is a crucial need for the area because of the uncertainty in oil prices and the necessity to diversify the economy. Several challenges face energy transition in GCC; for example, some country's targets are not part of any kind of legislation frame yet. Moreover, the breakdown of long-term objectives in medium-term projects after aligning them with the right policies is needed [2]. Furthermore, the GCC public sector is still relying heavily on fossil fuel revenues. Overcoming these challenges entails a strong collaboration between all entities in the society starting

from governments and the private sector to academia and the public.

COVID-19 affected GCC economies tremendously with governments spending huge amounts on health sectors, public safety, and welfare with an enormous drop in global oil demand specifically for transportation and aviation. The pandemic increased the social and environmental pressures on many oil and gas countries. It impacted certain industries in positive and negative ways; Figure 1 lists some of them. The healthcare sector was affected positively because of the huge demand for health services. Not only that, but digital trading and e-retail were a huge success during the lockdowns due to the restriction on movement, as was the development of IT services and the supply chain establishment. On the other hand, aviation and hospitality faced a negative impact because of the global restriction on travel.

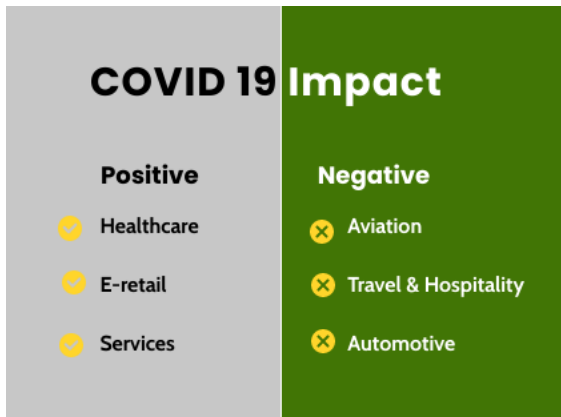


Figure 1: Covid-19 impact in some of industries

In contrast, the carbon dioxide emissions for GCC before and during COVID-19 are listed in Table 12. The data shows the level of enhancement in the air quality specifically for UAE and Qatar, and this is due to the limitation on transportation and aviation.

Table 2: Carbon dioxide emissions for GCC in million tonnes [12].

	2019	2020
Kuwait	101.5	91.6
Oman	82.9	80.4
Qatar	101.8	87.7
Saudi Arabia	579.6	570.8
United Arab Emirates	272	245.9

The government tried to overcome some of the consequences of COVID-19 by announcing stimulating

packages. Table 3 shows stimulus packages in billions of U.S. dollars for some GCC countries. These packages targeted vital sectors and small and medium enterprises. Other packages and initiatives were followed to help business procedures in several sectors like energy, tourism, and commercial.

Table 3: Some of GCC stimulus packages (\$B).

	Stimulus Package (\$B)
Oman	20
Qatar	23
Saudi Arabia	19
Bahrain	11.38

The energy transition is expected to be led by the power sector with increased growth and incorporation of renewable projects and electrification of economies. Still, the investment in the energy sector is expected to take a long time to reach its pre 2020 levels due to the increase in the amount of debt for some countries in the region like Bahrain, Oman, and Kuwait. Also, challenges like a weak global economic recovery, fluctuation of oil prices, and uncertainty in supply and demand are not clear for the long run. The investment in sustainable assets with low cost and low CO<sub>2</sub> emission should increase. Action is required for regulatory framework to ensure sustainable energy transition in the area.

#### 4. CONCLUSION

Energy transition is a massive process that can take five to twenty years, and COVID-19 highlighted the need to reflect on the energy landscape globally and locally. The global pandemic led to a behavioral change in energy use and changes in electricity demand. Overall, it will not necessarily crowd out decarbonization efforts, slowing down the global energy transition. Yet, some critical factors may temper the recovery phase with transformative potential [7]. More to that, the pandemic can act as an accelerator to the energy transition, and, in a mid-term plan, countries should seize new opportunities for the sustainable transition.

#### REFERENCE

- [1] I. R. E. A. (IRENA), "Energy Transition," 20 8 2021. [Online]. Available: <https://www.irena.org/energytransition>.
- [2] I. R. E. A. IRENA, "CLIMATE POLICY DRIVES SHIFT TO RENEWABLE ENERGY," IRENA, Abu Dhabi, 2017.

- [3] I. R. E. A. (IRENA), "Global Renewables Outlook: Energy transformation 2050," IRENA, Abu Dhabi, 2020 .
- [4] M. Main Garcia, "Energy transitions in the EU and the GCC: Challenges and opportunities," EU-GCC Clean Energy Technology Network, Brussel, 2020.
- [5] Samuel Asumadu Sarkodie, Phebe Asantewaa Owusu, "Global assessment of environment, health and economic impact of the novel coronavirus (COVID 19)," Environment, Development and Sustainability, 2020.
- [6] Bjarne Steffen, Florian Egli, Michael Pahle, Tobias S. Schmidt, "Navigating the Clean Energy Transition in the COVID-19 Crisis," *CelPress, Elsevier*, vol. 4, p. 1137–1141, 2020.
- [7] Silvia Pianta, Elina Brutschin, Bas van Ruijven, Valentina Bosetti, "Faster or slower decarbonization? Policymaker and stakeholder expectations on the effect of the COVID-19 pandemic on the global energy transition," *Energy Research & Social Science*, no. 76, 2021.
- [8] Raphael Heffron, Rory Connor, Penelope Crossley, Vicente López-Ibor Mayor, Kim Talus & Joseph Tomain, "The identification and impact of justice risks to commercial risks in the energy sector: post COVID-19 and for the energy transition," *Journal of Energy & Natural Resources Law*, vol. 39, no. 3, 2021.
- [9] Norbert Edomah and Gogo Ndulue, "Energy transition in a lockdown: An analysis of the impact of COVID-19 on changes in electricity demand in Lagos Nigeria," *Global Transitions*, vol. 2, pp. 127-137, 2020.
- [10] E. Somelar, "The Covid-19 Recovery Plan The European Green Deal," European Commission, 2020.
- [11] "UNDERSTANDING THE IMPACT OF COVID 19 IN THE UAE AND GCC REGION," ALTIOS, Dubai, 2020.
- [12] BP, "Statistical Review of World Energy," BP, 2021.
- [13] IEA, "Global Energy Review 2021," IEA, 2021.
- [14] R. Black, "COVID-19: ACCELERATING THE CLEAN-ENERGY TRANSITION," Oxford Institute for Energy Studies, 2020.
- [15] M. Mamlouk, "ENERGY TRANSITION : CHALLENGES AND OPPORTUNITIES," MESIA, MESCAT, 2020.
- [16] Chaouki Ghenai, Maamar Bettayeb, "Data analysis of the electricity generation mix for clean energy transition during COVID-19 lockdowns," *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, vol. 43, no. 23, 2021.
- [17] "The COVID-19 crisis deepens the gulf between leaders and laggards in the global energy transition," *Energy Research & Social Science*, pp. Rainer Quitzow, German Bersalli, Laima Eicke, Joschka Jahn, Johan

Lilliestam, Flavio Lira, Adela Marian, Diana Süsser, Sapan Thapar, Silvia Weko, Stephen Williams, Bing Xue., 2021.