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THE IMPACT OF RENEWABLE ENERGY ON THE OPEC OIL MARKET

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ABSTRACT. This study mainly aims to shed light on the real sources of this world in which we live, renewable energy sources are the real engine of the global economy at present, as well as to shed light on the fate of these renewable sources in the European Union countries or the Arab countries, as well as the study aims to Learn about global expectations of global demand for energy resources. Conventional and renewable energy, as well as identifying the most important repercussions of renewable energy sources on traditional energy sources (oil, coal, and gas) on the member states of the Organization of Arab States, where the Arab countries join hands, as well as developing all necessary economic plans that are keen to preserve these renewable sources, as well as taking countries All necessary measures to preserve this renewable energy and work to store it in all possible frameworks. One of the most important factors that help to maintain it. The resources are to work on building a regional program that contributes to building the necessary plans in the field of energy production from waste in particular, as well as measuring the impact of that energy in creating job opportunities and raising the economic level of society, as well as working and striving hard to transform into smart energy systems, especially in the Arab countries.

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Introduction

Throughout the 21st century, there has been a notable increase in global energy consumption, as energy has emerged as a crucial factor in the pursuit of sustainable development in both developed and developing nations. The primary catalyst for global warming and air pollution has prompted intensified international endeavors to mitigate all forms of environmental contamination, with a focus on renewable energy sources. These sources are favored due to their lack of adverse environmental impact and their potential to contribute to energy self-sufficiency, aligning with the global objective of environmental preservation. According to the prediction of the reference situation scenario, the demand for renewable energy sources is projected to persist until 2035, notwithstanding the prevailing dominance of oil in the global energy market. Consequently, there has been a decline in the

demand for fossil energy sources, which consequently has significant ramifications for the oil business, particularly in nations belonging to the Organization of the Petroleum Exporting nations (OPEC). The objective of this research is to ascertain the worldwide projections about the demand for conventional energy sources and renewable energy. Additionally, it seeks to determine the significant implications of renewable energy sources on the traditional energy sources (namely oil, coal, and gas) for member nations of the Organization of the Petroleum Exporting Countries (OPEC). The significance of this research lies in the examination of various forms of renewable energies and their level of advancement, as well as their impact on the global energy market. This will be achieved by a comprehensive analysis of prominent worldwide studies within the energy sector. Despite the significant growth and progress seen in the global renewable energy sector, it is noteworthy that a majority of OPEC member nations continue to account for a relatively small portion of the overall energy consumption. Moreover, their substantial reliance on conventional energy sources is anticipated to have implications for the future of the oil business. The distribution of energy sources in the global energy mix is anticipated to undergo alterations, particularly with regards to the proportion of renewable energy sources. These changes are projected to have noteworthy consequences for the oil sector within the member nations of the Organization of the Petroleum Exporting Countries (OPEC).

1. Literature review

Concept and types:

Renewable energy is defined as that energy derived from nature, especially natural resources, which never runs out and is constantly renewed, such as wind, water and sun available in most countries of the world, and can be produced from the movement caused by waves, tidal movement or geothermal energy and other innovations, which differ from fossil fuels such as oil, coal and gas, which do not create any harmful residues to the environment¹.

Renewable energies are one of the most important future sources of energy because they are expected to be a substitute for fossil fuels and the reason for the interest in this type of energy to reduce environmental pollution from traditional energy sources, especially carbon dioxide gas. By which we mean that energy that is repeated in nature automatically and periodically in the sense that it is energy derived from natural resources, which is renewable and is known as energy that comes and is generated from a natural source that does not run out and its most important advantage is that it is available everywhere on earth and can be simply converted into energy².

Depending on traditional energy and not exclusively confined to current generations, the use of

(¹) Mohamed Talebi, Mohammed Sahel, The Importance of Renewable Energy in Protecting the Environment for Sustainable Development - Presentation of the German Experience - Researcher Magazine, Issue 06, Faculty of Management and Economics, Blida University, 2008, p. 203.

(²)Saddam Faisal Kokes Al-Mohammadi, Investment in Renewable Energy Projects, Zain Library publications, Human Rights and Literature, Beirut, I1, 2017, p. 15

Renewable energy provides sources for later generations and makes their future safer³.

Renewable energy can be defined as energy that does not cause pollution to the environment from natural resources that are not run out, and is constantly renewed on its own and without human intervention, such as energy derived from the sun, wind or water, as well as energy derived from the movement of tides and mowers.

Renewable energy therefore consists of a number of sources (solar, wind, hydropower, biomass energy, geothermal energy, hydrogen energy⁴).

Renewable energy in the global energy market

For some time now, the world has been reducing the use of fossil energy sources because of their harmful effects on the environment and instead using other energy sources called renewable energy sources, alternative energy sources or clean energy sources, due to the lack of adverse impact on the environment on the use of fossil energy sources.

Table (1) The top five countries in the production of each renewable energy source during the period (2015-2019)

2019	2018	2017	2016	2015	Country	Energy sources
191	179	118	67	39	China	Solar (GIGAwatts)
91	85	70	50	35	United States	
69	62	55	45	34	Japan	
48	45	39	38	38	Germany	
39	31	18	10	5	India	
420	366	305	242	185	China	Wind power (GIGAwatts)
282	275	257	229	192	United States	
62	60	58	55	49	Germany	
61	55	37	36	31	India	
51	48	42	33	21	Brazil	
1284	1232	1194	1193	1130	China	Hydropower (Terawatt)
395	381	392	387	382	Canada	
392	388	370	380	359	Brazil	
329	317	325	292	271	United States	

(³) Organization of Petroleum Exporting Countries (OPEC) OPEC The 33rd Annual Report, No. 33, 2007, p. 112.

(⁴) Jan H. Kaliki and David L. Goldon, Security and Energy towards a new foreign policy strategy, translated by Hussam al-Din Khudour, Syrian General Authority for Writers publications, Damascus, 2011, p. 97-98.

208	194	188	187	171	Russia	
71	67	69	49	40	China	
69	67	68	69	70	United States	
56	54	52	51	49	Brazil	
51	50	50	50	48	Germany	
33	32	30	28	28	United Kingdom	
71	67	59	49	40	United States	
69	67	68	69	70	Indonesia	
56	54	52	51	49	Philippines	
51	50	50	51	48	New Zealand	
33	32	30	28	28	Turkey	

Source: Researcher's preparation, based on

Quarton and Samsatli, 2018 and IRENA Database. International Renewable Energy Agency (IRENA), Renewable Energy statistical 2020.

Increases in solar energy production during the period varied among different countries, with China, the United States of America and Japan making significant surges in solar production increases from 2015 to 2019, with China's solar production in 2019 increasing by about 390% for its production in 2015, The United States of America also achieved a 160% increase in 2019 from 2015, while Japan achieved a 102% increase in production in 2019 from 2015. The solar system needed to produce solar energy, advances in the operating techniques of solar power plants, as well as the government's approach to clean energy sources.

China also has the world's largest solar power plants to look to the world's leadership in its production, as well as the Chinese government's adoption of a solar panel manufacturing policy due to growing global demand. China's solar panel production reaches 60% of the world's production volume.

As for wind energy, China has moved strongly towards the production of renewable energy of all kinds, not only at the top of the list of the largest solar energy producers, but also ranked first in the ranking of the world's most producing wind power countries, producing 420 gigawatts in 2019, a report by Bloomberg New Energy Finance *revealed. China achieved the world's largest increase in wind power and recorded a 60% increase in 2019, as China boasts more than 135,000 turbines and generates more than 235 GIGAwatts of electricity annually, followed by the United States in second place with production (282 GW) for the same year. The reason for its prosperity is due to its cheaper costs, electricity generated by

* It's an organization. Founded in 1990, based in New York, to report on financial news

wind power is cheaper than electricity generated from fossil fuels, as 2020 was a record year for wind power in the United States of America, and Germany, which came in third (62 GW) in 2019, followed by India in fourth place with production (61 GW) for the same year 2019, Brazil ranked fifth in the list of the most producing countries for wind power with 51 GW in 2019. Production (1,130 TWh) in 2015, 2016 was about 1,193 TWh, and in 2017 it had a hydropower production capacity of 1,194 TWh and in 2018 it produced (1,232 TW). Per hour) of hydropower, finally, 2019 produced (1284 TWh), while Canada ranked second in the ranking of the world's most hydroelectric countries, with hydropower production capacity increasing in 2019 compared to 2015 with a production of 382 TW/ Hour) in 2015, in 2019 produced (395 TWh), as in Brazil, the United States, Russia and Norway, where these countries have seen a rise in hydropower production capacity in previous years. China is also leading the world in biomass energy production in the years (2015-2019), with a wave in China over the use of bioenergy in vast rural areas for use in agriculture, and China's bioenergy development work has not only covered rural areas, but also cities and industry because of their use of new methods to use them throughout China, such as the use of garbage to generate electricity, with 20 power plants set up in China of this kind, and then the United States. In second place, Brazil came in third, Germany fourth and the United Kingdom fifth. While the United States leads the world in the production of geothermal energy with a production of 71 MW because the largest factories for the production of geothermal energy are located in the United States of America and then comes second in Indonesian, as it also has the leadership in the production of this energy because of its location near the fire belt, which contains hundreds of active and inhabited volcanoes, which makes it own a treasure of that energy that contributes to the production of electricity, experts believe Indonesia has about 40 percent of the world's geothermal reserves (27,000 MEGAWATTS), and the Philippines ranked third and New Zealand in fourth place, while Turkey ranked fifth.

The reality of the oil industry in the OPEC countries

Current data from the renewable energies industry indicate that it has become a reality and occupies an important part of the energy policies of consuming countries and that the world is providing an increasing phenomenon of diversity in the global energy mix, especially in the renewable energy sector, and the future of renewable energies in the global energy mix depends on a number of factors, the most important of which is technological progress and its impact on cost reduction, financial and legislative support government, and future trends in world oil prices .

First: The location of member states in the global energy market

OPEC countries occupy an important position in the world oil and natural gas markets. They are located in a region where economic, political and security

factors are interlinked. The current and future importance is evident from the main energy indicators of production, exports and reserves of crude oil and natural gas, as shown in the tables below:

First: Fossil fuel production

Table (2) Crude oil and natural gas production in OPEC countries

Source: Researcher preparation, based on:

Natural gas production (1 billion cubic meters)					Crude oil production (1,000 barrels per day)						OAPEC Countries
2019	2018	2017	2016	2015	2020	2019	2018	2017	2016	2015	
55.1	53.2	49.8	61.9	60.2	2702	3058.0	3007.2	2967.0	3088.2	2988.6	Uae
17.1	15.4	15.3	15.2	15.4	196.8	194.0	194.0	197.0	202.0	202.0	Bahrain
0.9	1.2	1.3	1.4	1.6	33.6	37.0	38.2	36.6	43.4	47.0	Tunisia
90.3	97.5	96.6	95.0	84.6	888	954.2	970.0	993.0	1020.3	1157.0	Algeria
112.6	112.7	110.5	105.5	99.8	9100	9808.1	10315.4	9959.7	10488.8	10192.5	Saudi Arabia
3.7	3.6	3.4	3.9	4.3	25.2	24.0	16.0	17.0	8.0	9.7	Syria
15.3	14.5	11.5	10.9	9.7	3946	4576.0	4410.0	4469.0	4164.0	3744.0	Iraq
171.9	170.3	167.0	171.6	170.5	590	650.1	600.6	605.0	653.7	649.0	Qatar
14.0	13.9	13.1	13.8	13.7	2405	2677.8	2736.2	2704.3	2954.3	2858.8	Kuwait
14.2	13.9	14.3	15.6	19.9	422	1096.6	951.0	811.0	389.0	401.5	Libya
67.5	60.8	50.7	42.0	44.3	595	526.0	544.1	537.0	567.0	596.2	Egypt
562.6	556.9	533.4	536.7	523.9	20903	23601.8	23782.6	23296.6	23578.7	22846.7	Your father
3974.0	3842.0	3664.0	3564.0	3550.0	81292	87058.0	87250.0	85540.0	79955.8	78677.6	Total World
14.15	14.49	14.55	15.05	14.75	25.7	27.11	27.25	27.23	29.48	29.03	Your OAPEC percentage of the world

1. Statistical report issued in 2020 by the Organization of Arab Petroleum Exporting Countries (OAPEC).

1– Organization of Arab Petroleum Exporting Countries (OPEC), 47th Annual Secretary-General's Report, 2020, p. 118-119

From the previous table, world crude oil production fell from 87,058.0 thousand barrels per day in 2019 to (81,292,000 barrels per day) in 2020. This is due to the decline in global oil demand as a result of the CO-19 pandemic, as well as because of opec's commitment to reduce production to reach stable oil prices. It was down from 23,601.8 barrels per day (27.11 percent) in 2019, due to the commitment of Arab OPEC members to cut record production as well as demand due to the Coronavirus. At the Arab level, Arab crude oil production fell from 24,615,000 barrels per day (bpd) in 2019 to 21,799 barrels per day in 2020.

While the table notes the rise in world natural gas production between 2018 and 2019, the world's total natural gas production for 2018 was 3,842.0 billion cubic meters, while in 2019 (3,974.0 billion cubic meters), an estimated 3.4% increase, while at the level of OPEC member states, it is clear that there are differences in natural gas production, with Tunisia, Algeria and Saudi Arabia registering a decline in natural gas production, it rose in other member states, particularly in the United Arab Emirates, with gas production of 55.1 billion cubic

meters in 2019, while in 2018 it reached 53.1 billion cubic meters. Natural gas production at the member states level fell slightly from 14.49% in 2018 to 14.15% in 2019.

Second: Fossil fuel exports in OAPEC countries

Table (3) issuing crude oil (1,000 barrels/day)

OAPEC Countries	2015	2016	2017	2018	2019
Uae	2501.5	2407.8	2379.0	2296.5	2414.2
Bahrain	149.0	155.0	153.8	154.8	153.5
Algeria	519.5	542.7	529.8	435.4	445.5
Saudi Arabia	7163.0	7483.0	6968.0	7371.6	7038.0
Iraq	3109.6	3370.2	3384.1	3552.2	3527.0
Qatar	561.8	508.8	452.4	536.2	524.5
Kuwait	1967.6	2128.2	2002.2	2050.0	1986.3
Libya	361.3	350.1	792.1	998.6	1035.8
Egypt	247.9	236.4	217.2	210.7	208.5
Total World	61824	60696	60931	61531	61002
Your OAPEC percentage of the world	26.819	28.30	27.70	28.57	28.17

Source: The researcher's preparation is based on the 2020 statistical report of the Organization of Arab Petroleum Exporting Countries (OAPEC).

The decline in oil exports to OPEC member states varies from country to country, with Saudi Arabia experiencing a decline in its oil exports for 2019 from 7,371,000 barrels per day (bpd) to 7,038,000 barrels per day, followed by Iraq with exports for 2018 (3,552.2 thousand barrels per day) down from 3,527,000 barrels per day (3,527,000 barrels per day). The table also shows a drop in oil exports to member states from 28.57% in 2018 to 28.17% for 2019, due to the CORONA pandemic on the one hand and as a result of the record production reduction agreement imposed by OPEC countries to cope with the pandemic.

The 2020 annual report of the Organization of Petroleum Exporting Countries (OPEC) indicates a decline in oil exports to member states in 2020, and the organization estimated this decline at the level of individual countries, as Libya saw a sharp decline in the value of its oil exports by an estimated 80.5 percent in order to stop oil production and exports for eight months due to restrictions imposed on oil ports under the Corona pandemic. Egypt followed by 50%, Iraq at 46.8%, Kuwait with 42.3%, Saudi Arabia with 40.4%, and Qatar and Bahrain saw a 30.7% decline in oil exports each.

As for natural gas exports, they are as follows:

Table (4) Natural gas exports (1 billion cubic meters)

OAPEC Countries	2015	2016	2017	2018	2019
Uae	13.20	13.20	7.27	7.08	7.421

Algeria	43.51	53.97	54.00	51.60	42.776
Qatar	127.62	128.23	128.65	129.28	128.560
Libya	5.13	4.66	4.25	4.25	5.430
Egypt	0.24	0.99	1.33	2.58	6.724
Oman	10.00	10.64	11.49	13.57	14.058
Yemen	1.98	0.00	0.00	0.00	0.000
OAPEC	189.7	201.1	195.7	194.8	190.910
Total World	931.8	939.1	952.9	967.1	1003.2
Your OAPEC ratio	20.35	21.41	20.53	20.14	19.030

Source: The researcher's preparation is based on the 2020 statistical report of the Organization of Arab Petroleum Exporting Countries (OAPEC).

The table shows that Qatar retained its top natural gas exporter in the Arab countries in 2019 with exports (128.560 billion cubic meters), and the Algerian Republic ranked second with total exports for 2019 (42.776 billion cubic meters), followed by the Uae with natural gas exports for 2019 (7.421 billion cubic meters), and Libya with gas exports for the same year (5,430), Then the Arab Republic of Egypt, which sees from the table an increase in the value of its natural gas exports in 2019 compared to 2018 to reach (6.724 billion cubic meters) after exporting many shipments of natural gas from the ADCO complex on the coast. The table also indicates a decline in OAPEC natural gas exports in 2019 compared to 2018 of 19.030% and in 2018 it was 20.14%.

Third: Proven reserves of crude oil and natural gas
Table (5) Proven reserves of crude oil and natural gas

Proven crude oil reserves (1 billion barrels/end of year)							Proven natural gas reserves (1 billion cubic meters/year-end)					
Countries	2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
Uae	97.8	97.8	97.8	97.8	97.80	97.8	6091	6091	6091	6091	6091	6091
Bahrain	0.1	0.1	0.1	0.1	0.10	0.1	163	224	210	193	81	81.3
Tunisia	0.4	0.4	0.4	0.4	0.43	0.43	65	65	64	64	64	64
Algeria	12.2	12.2	12.2	12.2	12.20	12.2	4504	4504	4505	4505	4504	4505
Saudi Al , A	266.5	266.2	266.3	267.0	267.07	267.26	8587	8618	8720	9069	9201	9201
SurYa	2.5	2.5	2.5	2.5	2.50	2.5	285	285	285	285	285	285
Iraq	142.1	148.4	147.2	145.0	148.40	148.4	3694	3820	3744	3729	3820	3820
Qatar	25.2	25.2	25.2	25.2	25.24	25.24	24299	24073	23861	23861	23846	23846
Kuwait	101.5	101.5	101.5	101.5	101.30	101.5	1784	1784	1784	1784	1784	1784
Libya	49.5	48.4	48.4	48.4	48.36	48.36	1495	1505	1505	1505	1505	1505
Egypt	3.5	3.4	3.3	3.2	3.15	3.146	2086	2221	2221	2221	2209	2208.7
Your father	701.3	706.2	704.9	703.4	706.75	706.9	53054	53190	52989	53306	53389	53390
Total World	1220.9	1242.6	1247.6	1248.1	1252.0	1285	196887	195388	197196	201651	205022	205243
Your OAPEC percentage of the world	57.44	56.83	56.48	56.35	56.45	55.11	26.94	27.22	26.87	26.34	26.04	26.013

According to the previous table, the world's oil reserves rose in 2019 to 1,252.0 billion barrels compared to 2018, reaching 1,248.1 billion barrels, with the world adding nearly 19.3 billion barrels to the world's oil reserves, reaching 1,285 billion barrels in 2020. As for OPEC member states, crude oil reserves rose in 2019 to 56.45%, up from 56.35% in 2018. This is due to the rise in reserves in the United Arab Emirates (97.80 billion barrels) as a result of the discovery of additional crude oil reserves, while there was no change in the reserves of other OPEC countries, as the table notes that crude oil reserves did not change in 2020 and remained at the limits of 706.9 billion barrels, or 55.011 percent of the world's total reserves.

The world's natural gas reserves will also rise from 201651 billion cubic meters in 2018 to 205022 billion cubic meters in 2019 to 205243 billion cubic meters in 2020.

As for opec member states, it is noted that they saw a rise in 2019 as a result of the rise in natural gas reserves in the UAE, as noted in the table the rise of natural gas reserves in Saudi Arabia from (9069 billion cubic meters) in 2018 to (9,201 billion cubic meters) in 2019, bringing OPEC's total natural gas reserves for 2019 (53,389 billion cubic meters), or 26.4% of the world's total reserves, In 2020, natural gas reserves did not change, reaching 53,390 billion cubic meters, or 26,013 percent of the world's total.

Implications of the development of renewable energy sources on OPEC countries

Global growth in renewable energy generation and production capacity improved during the third quarter of 2020, following a sharp slowdown in the previous quarter due to the emerging COV pandemic and some funding challenges, but still below pre-pandemic levels, as the resumption of economic activity led to the recovery of many of the products and technologies needed for the energy sector in conjunction with increased demand, as a result of the relative rise in the prices of traditional energy sources, which had an impact. Positive, albeit relatively, reflected in renewable energy projects, both as the timing of implementation and the volume of investments directed towards them during the first half of 2020, which declined sharply⁵.

34% compared to the same period in 2019, according to the latest data from the International Agency for Renewable Energies, as the International Energy Agency (IEA) confirmed that solar energy production will contribute to the largest increase in electricity supplies from renewable sources during the next decade of the 11th and 11th century N, renewable energy is expected to account for about 80%, of the growth in electricity generation globally under the current circumstances. Renewable energy sources are expected to exceed coal as the

⁵) IEA. Renewable Energy Market Update, Outlook for 2020 and 2021.)

primary means of electricity production by 2050, with the combined share of PV and wind power generating solar power generating globally rising to nearly 30% in 2030, compared to about 8% in 2019.

The IEA Renewable Energies 2020 report, released in November 2020, also showed that new additions to renewable energy capabilities worldwide will increase to a record high of nearly 200 GW by the end of 2020, accounting for about 90% of the total expansion of global energy capacity during the same year, supported by wind, hydropower and solar photovoltaic projects, particularly in the United States and China. It is estimated that they will see a 30% increase in wind and solar energy, and the report showed that renewable energy sources outside the electricity sector are suffering from the effects of the emerging COV pandemic⁶.

On the other hand, transport biofuels in 2020 experienced their first annual decline in two decades, driven by a wider decline in transport demand and lower fossil fuel prices, reducing the economic attractiveness of biofuels. Demand for bioenergy in industry has also declined as a result of the marked decline in economic activity.⁷ The net result of these declines and the growth of renewable energy is an expected total increase of about 1% in global demand for renewable energy in 2020, and India and the EUROPEAN Union's contribution to the record expansion of global renewable energy additions by about 10% in 2020, the fastest growth since 2015, shows strong demand forecasts for renewable energy sources in the medium and long term⁸.

The international renewable energy community should increase from 26% to 57% by 2030, more than double, in order to achieve the Sustainable Development Goals, the report noted. During the same period, the report noted the importance of doubling annual investment in the renewable energies sector from an average of about \$300 billion during the period (2013-2018), to nearly \$800 billion by 2050, to accelerate the global adoption of renewable energy at the required pace. Therefore, as demand for renewable energy sources increases, it is expected that they will have repercussions on OAPEC countries⁹.

The epidemic crisis, which emerged suddenly and negatively affected the countries of the world and all international sectors, especially the energy sector, which has been completely shut down, has completely closed sectors, and the pandemic has gone beyond the idea of overcoming it, becoming a serious disease with which we coexist like other serious diseases such as tuberculosis, plague and

(⁶) IREAN, (2020) Renewables Account for Almost Three Quarters of New Capacity in 2019, 6 April.

(²) A. Weeb and D. Coates, Biofuels and Biodiversity, Technical Series NO.65 (Montreal Canada : Secretariat of the Convention on Biological Diversity ,2012)

(⁸) Renewable Energy 21 st Century (REN21), Global status Report (Paris: REN21 Secretariat, 2011).

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other infectious diseases, forcing the countries of the world in this world to speed up the implementation of the idea of energy replacement and work to change the future of global energy.

Developments in the global oil market overshadowed economic performance levels in Member States during the third quarter of 2020, as output levels in the oil sectors improved relatively. This was mainly due to the growth in the performance of the global economy and the accompanying recovery in oil demand levels, owing to the easing/elimination of isolation measures and global travel restrictions to reduce the spread of the emerging CORONAVirus¹⁰.

OPEC member states have seen a rise in oil revenues, one of the most important sources of national income and contribute to sustainable development, due to the support received by OPEC member states as a result of opec's commitment to the production standard reduction agreement, which succeeded in recovering losses in oil prices, which are still 40 percent below their pre-pandemic level.

However, there are growing concerns about the slowdown in the overall economic growth rates of Member States in the near term, in line with uncertainty about the weak pace of recovery of the global economy, amid the start of a second wave of the emerging COV pandemic¹¹.

Conclusions and recommendations

First: Conclusions

- 1- Renewable energy is the basis for the sustainable supply of energy to various developed and developing countries.
- 2- Renewable energy plays a major role in protecting the environment because it is a clean energy
- 3- There is a great dependence by most OPEC countries on fossil energy sources in access to financial resources and poor interest in renewable energy sources .
- 4- Renewable energy currently operates (2021) as a complementary energy in the global market and is an alternative energy in the future.
- 5- The weakness of local enterprises in OPEC countries in supporting renewable energy sources.
- 6- The use of renewable energy has become one of the main axes towards the transition to a sustainable energy system.
- 7- Renewable energy markets are one of the most growing markets in the world.

(¹⁰) Energy World, (2020) India's renewables installation could fall by a fifth due to lockdown: Wood Mackenzie.

(¹¹) Energy World, (2020) India's renewables installation could fall by a fifth due to lockdown: Wood Mackenzie.

Recommendations

1. OPEC member states should take advantage of the opportunity to rise in oil prices to develop their economies in a more sustainable and balanced manner as some consuming countries encourage renewable energy industries in order to lay off oil.
2. The entry of OPEC member states into the renewable energy industry should be considered for exploitation in some member states to liberalize quantities of oil and natural gas for export in other member states.
3. Preparing a regional initiative to transform smart energy systems in Arab cities.
4. Activate a regional initiative to enable the provision of modern energy services to rural areas in cooperation with regional and international development institutions and programs.
5. "Price practices" and net energy measurement, including qualification requirements for companies, equipment, application procedures, contractual documents, tools and institutional knowledge required for software success.

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