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The Impact of COVID-19 on the Global Renewable Energy Industry

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***Abstract*— The COVID-19 pandemic has created a crisis in the society with wide-ranging impacts not limited to the health and economic sectors. Every aspect of the renewable energy industry has been affected, from the supply chain down to the end consumer. Delays in raw material production, installations and labor shortages are a few of the challenges currently faced by the key stakeholders in the industry. The ability of renewable energy sources to provide clean and cost-effective energy for essential services such as healthcare makes them a vital organ in the fight towards COVID-19. The International Renewable Energy Agency (IRENA) urges governments to leverage the progress achieved with renewable energy to meet the global climate and sustainability objectives in energy security and economic recovery to protect the health and welfare of the members of the society.**

Keywords*— COVID-19; renewable energy; healthcare.

I. INTRODUCTION

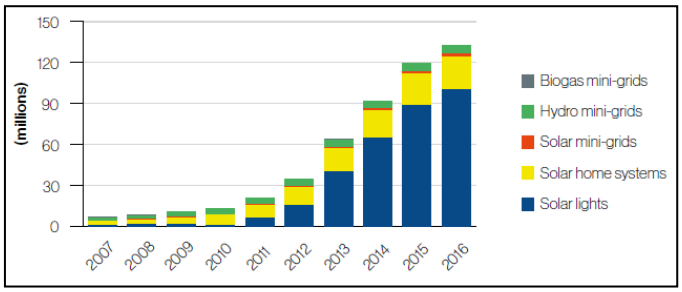
Renewable energy is energy which is obtained from naturally occurring currents of energy or from energy which can be regenerated by naturally occurring energy currents on the time scale of a human life.

Renewable energies cannot generally be transported, but have to be accessed and converted at the location of their occurrence, at typically a much lower density than that of a large power station where the energy potential of the fuels can be concentrated highly. As a result, renewable energy resources typically result in small-scale installations, such as heating and supplementary electrical supply by solar power, or in medium-scale installations, such as wind farms.

Renewable energy is one of the cheapest sources of energy for power generation. Non-existent fuel charges have led to more than two-thirds of the world's population adopting renewable sources to meet their daily energy needs [1]. It also reduces the emission of greenhouse gases and protects the mankind from diseases. A study conducted by Harvard concluded that people living in cities contaminated with air pollution are more likely to die of COVID-19 [2].

Renewable sources of energy have been the most resilient energy source to the COVID-19 lockdown measures. The demand for renewable energy has fallen but the demand for renewable electricity has largely been unaffected. In Quarter 1 (Q1) 2020, global use of renewable energy in all sectors increased by about 1.5% relative to Q1 2019 [3]. Renewable electricity generation increased by almost 3% in the same period due to previously completed solar photovoltaic (PV) and wind project installations. According to Wood Mackenzie estimates, 2020 global solar and energy installations are expected to drop nearly 20% compared to pre-COVID-19 projections [4]. The ongoing pandemic has resulted in 17.8% of the total clean energy workforce of the United States of America (USA) being made redundant [5].

Figure 1: Population served by off-grid renewable energy solutions.



Source: IRENA (2019).

The rapid industrialization and urbanization coupled with population growth in the Asia Pacific region make it the largest market for renewable energy during the forecast period of 2019 – 2021 [6]. According to IRENA, the total solar installed capacity of the region in the year 2019 was 330,786 megawatts (MW) [7]. The adoption of new solar technologies such as floating solar farms and building integrated photovoltaics (BIPV) during the forecast period will lead to solar energy being the largest renewable energy market.

China was the epicenter of the COVID-19 outbreak. The second half of 2020 will see the majority of Chinese renewable energy producers resume their operations to meet the increasing demand and clean energy targets for the forecast period.

II. RESEARCH METHODOLOGY

The authors analyzed the impact of COVID-19 on the renewable energy industry through extensive online research. Multiple sources such as government organization reports and news blogs were utilized to gather data and information on the current and future scenario of the renewable energy industry.

III. RESULTS AND DISCUSSIONS

The renewable energy industry has suffered a major setback in terms of component shortages due to disruptions in global supply chains which have resulted in slowdown of renewable energy projects. A faster recovery from the pandemic would enable projects to be completed at a greater pace. In Australia, a renewables-led economic recovery has been advocated to encourage investment and boost the country's energy transition [8].

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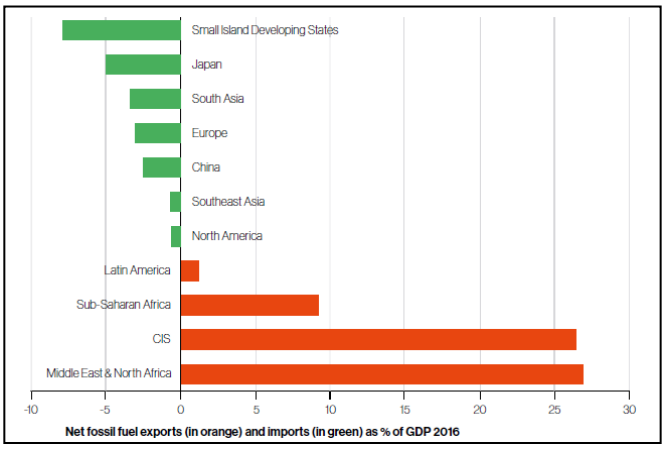
In Q1 2020, the share of renewables in global electricity generation increased to nearly 28% from 26% in Q1 2019 at the expense of the traditional sources of energy, coal and gas [3]. The growth of renewable electricity generation is smaller than anticipated due to the ongoing pandemic.

Before lockdown measures were implemented, shares of variable renewables were similar or higher due to favourable weather conditions, projects completed in 2019 and limited electricity demand growth. After lockdown measures were implemented, a noticeable step up in variable shares of demand was observed due to a decrease in demand for electricity. Belgium, Italy, Germany, Hungary, and USA are a few countries that have recorded high hourly shares of variable renewables during the lockdown [3]. On March 22 2020, Germany imposed strict social distancing measures. During this period, the share of variable renewables has been consistently higher than in the same period in 2019. Overall, electricity systems have been able to accommodate the increasing shares of variable renewables due to prior experiences of increase in solar PV penetration in summer months.

Figure 2: Regional impact of the energy transition.

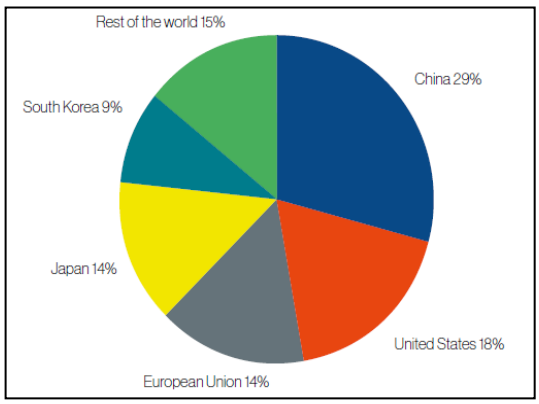


Source: IRENA (2019).

Major suppliers of solar PV and energy storage equipment in China, the Republic of Korea and USA have been affected by COVID-19, resulting in an uncertainty over the capacity growth of distributed solar PV applications in 2020 [9]. In 2019, one-fifth of all renewable capacity deployed consisted of individuals and small-to-medium enterprises installing solar PV panels. Currently, the installation of solar PV has stopped due to lockdown measures implemented to combat the disease.

The impact of COVID-19 on the renewable energy industry could be enormous due to the regions severely affected by pandemic experiencing a reduction in construction activities. The production of renewable electricity depends on the availability of natural resources such as favourable weather conditions. The delay in construction due to supply chain disruption and labor restrictions could decline the growth rate of renewable power capacity addition for the year 2020. The duration and extent of lockdowns, social distancing measures along with the scope and timing of economic stimulus package in response to the dwindling economy of the countries will have a major influence on the functioning of the renewable energy industry.

Figure 3: Cumulative share of renewable energy patents end 2016.

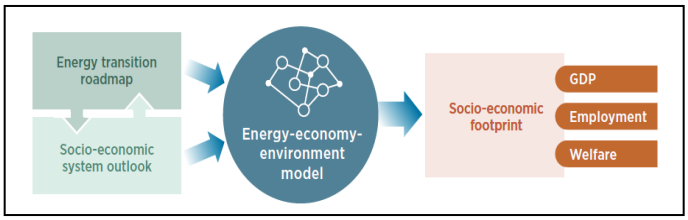


Source: IRENA (2019).

IV. RECOMMENDATIONS

- Revisit deadlines for renewable energy projects that face contractual obligations for near term delivery - To offset the pandemic's impact on the labor force and the global supply chain for renewables, delayed projects should be resumed under the same terms and frameworks [10].
- Affirm and extend policies promoting renewable energy solutions (both centralised and decentralised) - To provide long-term policy certainty in these times of crisis, governments must consider affirming existing and planned support schemes, as well as continuing to implement appropriate market and policy frameworks that support grid development, storage and flexibility, and other infrastructure critical to support a higher penetration of renewable energy [10]. Permitting and siting approvals should be fast-tracked so that the renewable energy industry can plan ahead and protect its workforce.

Figure 4: The energy transition and its socio-economic footprint.



Source: IRENA (2018).

- Prioritise renewable energy in any stimulus measures and commit to phasing out support for fossil fuels - Stimulus packages for any sector should include conditions to reduce emissions and accelerate the transition to a clean, low-carbon economy [10]. Within the energy sector, fossil-fuel subsidies must be steered towards investments in low-carbon infrastructure, as well as towards research and innovation to support higher shares of renewables, particularly in end uses such as transportation, heating and cooling. With higher reliance on renewables, countries and communities can benefit from more stable energy prices and greater energy independence, along with reducing emissions and fulfilling climate objectives.

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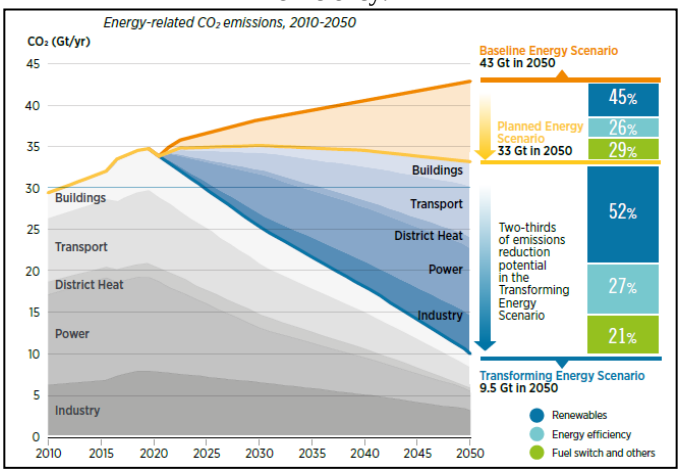
The actions outlined above would support a sustainable economic recovery, make societies more resilient, and help to fulfil the objectives of the Paris Agreement and the 2030 Agenda for Sustainable Development. In response to the crisis, governments are currently in a position to recognise the benefits of renewables, continue building broad public support for the transformative decarbonisation of societies, and pave the way for a clean and low-carbon economy.

V. CONCLUSION

Fossil fuels are still the backbone of the global energy system. Two-thirds of the global emissions are contributed by energy industry through production and consumption [11]. The extent of impact of COVID-19 on the renewable energy industry has not been fully realized. The lockdown measures implemented in various countries to combat COVID-19 have led to a reduction in emissions.

The renewable energy industry is vital for the energy security of the country. It is important that the authorities enact effective policies and promote public-private cooperation for a sustainable energy system. Post COVID-19, countries should focus on renewable energy to meet their energy needs and equip themselves to combat similar situations in the future. The successful energy transition will aid in addressing climate change, combat global warming and promote sustainable development.

Figure 5: The bulk of emission reductions – Renewables and efficiency.



Source: IRENA (2020).

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