

# COVID-19: Re-imagining the Global Energy Economy

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**Leena Srivastava, Deputy Director General – Science, IIASA**  
[srivastava@iiasa.ac.at](mailto:srivastava@iiasa.ac.at)

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## About the author

**Leena Srivastava** is Deputy Director General for Science at the International Institute for Applied Systems Analysis (Contact: [svrivastava@iiasa.ac.at](mailto:svrivastava@iiasa.ac.at))

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## COVID-19 and Energy

COVID-19, first reported in China in the end of December 2019, took the world by storm. Even after a few weeks of experience with the virus, till then largely restricted to China, the rest of the world did not see the virus as a risk – let alone an existential threat to many! Within a matter of the next three to four weeks, the wheels of the world economy screeched to a halt. Among the first sectors to be hit was the airline industry. In an effort to curb the international transmission of COVID-19, country after country closed its borders to international air travel. This was soon followed by the closing of regional and domestic air travel too. With no other means to address the pandemic, Governments resorted to hygiene measures to check the spread of the virus, and both control as well as phase out the load on the health infrastructure of countries. This was invariably followed by a lockdown with nearly half the world under lockdown by the end of March 2020. How long would such drastic measures continue is yet uncertain. However, what is certain is the enormous economic impact of the shutdowns—the world is already said to be in a recession worse than that experienced in 2009 according to the International Monetary Fund (IMF). And the Organisation for Economic Co-operation and Development (OECD) has warned that the economic impacts of the actions resulting from this pandemic will be felt for a very long time.

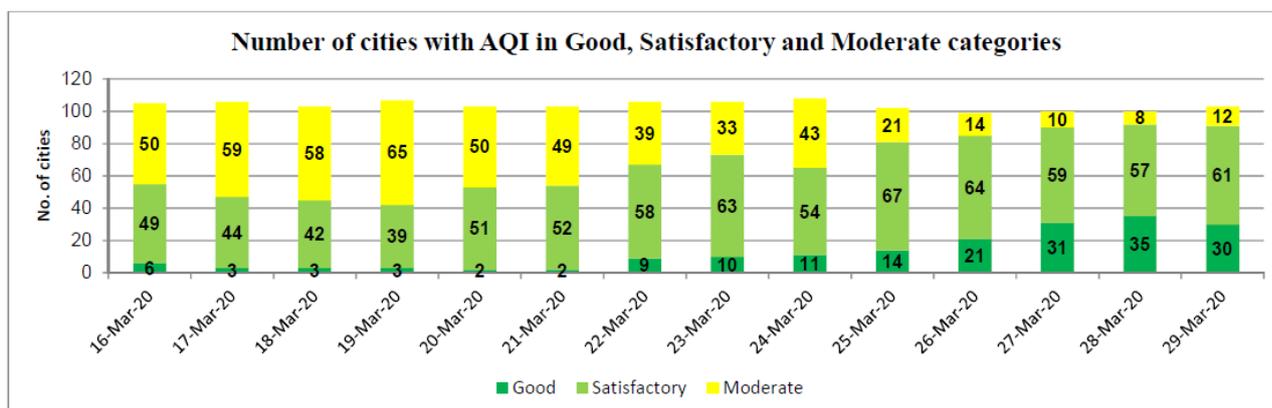
One of the sectors which is being hit hard by the lockdown is the energy sector. Within the energy sector, consumption of transport fuels has taken the biggest hit. The demand for cooking energy, however, has possibly increased. Different countries have experienced varying levels of impact on oil demand and the evidence is still rolling out. But, an article published on April 11, 2020 estimates US oil demand to have fallen by 30%, India's oil demand by 70%, and Spain 23%. Similarly, the demand for electricity too has gone down by between 10–30%—with domestic demand going up but with steep reductions in every other sector. How low will demand fall and how long will this demand suppression last is anybody's guess just now, but there is an increasing recognition that full economic recovery could take anywhere between three to five years. It needs to be borne in mind that both the energy producing sectors and the intensive energy consuming sectors employ large numbers of people who are facing a very uncertain and volatile future.

Apart from the forced brakes applied on mobility, several choice barriers on conducting businesses and on consumption patterns are also being broken—possibly irreversibly—leading to a continued depression in demand for energy. In the business world, work-from-home was largely practiced by the millennials in the technology sectors. We argued, ad nauseum, that there is no substitute for face-to-face meetings, conferences, negotiations etc. At a private level, millions of consumers have been introduced to the convenience of online shopping, overcoming any entry barriers that they may have faced. A whole new industry—at least in terms of scale and efficiency—is emerging with unprecedented innovation and job opportunities. And, it is going to be impossible to put these genies back in their bottles!

At the same time, the reduced demand for transportation fuels has led to a dramatic improvement in the air quality of cities around the world. As a case in point, are India's cities—among the most polluted in the world. Figure 1 illustrates the ambient air quality levels in different cities following the lockdown.

Figure 1: Air Quality improvements in Indian cities during lockdown

AQI Category	AQI Range	Associated Health Impact
Good	0-50	Minimal Impact
Satisfactory	51-100	Minor breathing discomfort to sensitive people
Moderate	101-200	Breathing discomfort to the people with lungs, asthma and heart diseases
Poor	201-300	Breathing discomfort to most people on prolonged exposure
Very Poor	301-400	Respiratory illness on prolonged exposure
Severe	401-500	Affects healthy people and seriously impacts those with existing diseases



Source: <https://cpcb.nic.in/openpdffile.php?id=TGF0ZXN0RmlsZS9fMTU4NjMxNTgxM19tZWRpYXBob3RvMTI2NDYucGRm>

## Energy and Sustainability

Modern energy consumption by all is acknowledged to be an essential driver for achieving the sustainable development goals (SDGs). But, the consumption of fossil energy forms has, and is, contributing to nearly 70% of the emissions of greenhouse gases in the world. Coal, followed by oil and gas, has the highest emission rate of carbon dioxide. Both the Climate Agreement and SDG 7 (Energy) call for three critical actions to ensure that the world moves towards a sustainable energy pathway. The call is for moving aggressively towards renewable energy; managing energy demands and doubling the rate of energy efficiency improvements; and, ensuring access to modern energy for all. While the world had already made huge strides in promoting renewable energy, it is established that we are definitely not on track to achieve SDG 7 by 2030<sup>i</sup> on all three sub-goals—with energy access lagging the most.

To keep the world on track to limit temperature increase to 1.5 deg C over pre-industrial levels, the IPCC has estimated<sup>ii</sup> that coal consumption should decline by 97% and that oil consumption should decline by 87% by the year 2050, over 2010 levels, in a limited or no overshoot scenario. The same IPCC report estimates that final energy demand in 2050 relative to 2010 needs to reduce by a third while the share of renewable energy in total electricity needs to go up to 77%!

More importantly, a number of studies have estimated that “declining carbon emissions after 2020 is a necessity for meeting the Paris temperature limit of “well below 2 degrees”<sup>iii</sup>. This would mean that fossil energy consumption should start declining from 2020 onwards.

## **COVID-19 and Sustainable Energy**

Today, the COVID-19 pandemic has the oil industry staring at an existential crisis—the drastic and rapid fall in demand has not only taken oil prices to the lowest levels seen in decades but, coming on the back of a glut, has seriously dented the viability of new investments as well as existing assets. Oil prices in the United States have gone negative causing severe economic pain there, while countries totally reliant on the oil economy could be heading towards bankruptcy. The reductions in demand for electricity are impacting coal-based generation—a great employment generator at least in the developing world—most adversely too as compared to gas and nuclear power generation. In this scenario, to urge countries to use their policy frameworks and fiscal stimuli to support a more sustainable energy industry seems heartless—however, it is also totally irrational to continue to support these industries when they are clearly in their sunset phase. Even today, the fossil fuel industry enjoys a subsidy of USD 370 billion per year, as against USD 100 billion for renewable energy<sup>iv</sup>! It is the energy economy of the past few decades that has brought the planet to the brink from a sustainability perspective—we cannot go back and support the same! And if we continue to support the fossil fuels sector, we are at great risk to take the world to other tipping points and extreme events as identified in the Fifth Assessment Report of the IPCC.

Having said that, it is well understood that we cannot continue in a state of lockdown forever. It is also a given that the post-COVID-19 recovery will need energy to drive the economy and society. So, how can this recovery be designed such that the energy economy of the future would align with the call of SDG 7 and such that the awareness created, and the behavioral willingness to change forced by this pandemic, are not lost?

### **Maximize energy demand reduction opportunities**

The pandemic has forced a number of rapid innovations in the way the world goes about its business and life. Most of these innovations have obviously tried to find a substitute for commuting and the need for mobility. Educational institutions have risen to the challenge and placed a record number of their courses online and are engaged in online teaching at all levels. Offices and non-customer facing businesses have encouraged work-from-home and are increasingly becoming confident of their ability to maintain efficiency and productivity using this means of business handling. Where residential circumstances make work-from-home difficult, area based shared workspace arrangements can provide a good proxy and still result in significant energy savings. Conferences and workshops with fairly large number of participants have shifted to the use of online platforms and have been conducted successfully across the globe. On the flip side, the willingness of populations to travel in crowded public transport modes is likely to decline leading to a larger share of vehicle ownership.

The widespread efforts on financial inclusion, e-banking, and e-finance transactions have facilitated e-commerce at an unprecedented level. Even the business and leisure related travel industry is now innovating to see how they could provide a range of alternate services to best use their assets. Where manufacturing

cannot be substituted by services, the management of product consumption needs through the maximization of shared services can result in a more material/resource efficient meeting of service demands.

The key learning that COVID-19 has provided us is that businesses and people can be fairly adept at innovating and adapting to change. However, they may need to move from the current band-aid solutions to more customized and efficient solutions for the longer term sustainability of such solutions. This is where governments need to ensure that the policy/regulatory environment would need to adapt quickly to align incentives with desirable outcomes. One key impetus that needs to be provided is for the *strengthening of an inclusive and reliable digital economy* adequately supported by entrepreneurial initiatives and human capacities. The other key policy impetus needs to go to the functioning of a *sharing economy*—from mobility services, to online delivery systems to workspaces and more.

### **The renewable energy sector is ready to take-off**

Where demand reduction/management and shared services prove inadequate, the role of renewable energy needs to be aggressively stepped up. The renewable energy sector has witnessed an impressive growth in the last few years with prices of solar and wind energy continuing to drop. As per the IEA “The share of renewables in world electricity generation reached 25% last year while remaining at 10% in heat and below 4% in transport demand”<sup>v</sup>.

Clearly the transport sector and the provision of mobility services needs careful systemic attention. The incentivization of shared services, supporting attractive public transport options where available, as opposed to unsustainable ownership of vehicles can also serve to reduce the spread of charging infrastructure that needs to be set up for electric vehicles. Reduced support infrastructure costs can improve the attractiveness of e-vehicles used for commercial purposes. E-vehicles, powered by renewable energy, would help us stay away from fossil fuels and can be supported by both regulatory and fiscal measures.

Utility scale renewable energy sources, especially based on solar and wind energy, are increasingly price competitive at a grid level. A lot of this has been, and is expected to be, led by growth in the solar industry. The challenge posed to the renewable energy sector to fill in the gap likely to be created by a reduction in fossil demand is that most of the supplies of solar panels and equipment comes from China and the sense of vulnerability from supply disruptions is acute. Additionally, is the continuing concern around stability of old-fashioned grid infrastructures.

### **Provide access to modern energy to all**

Historically, access to modern energy implied a move away from primary biomass consumption to more fossil fuel based and electricity consumption. Today, the poor and marginalized sections of a country's population can be helped to leap-frog to the most sophisticated sustainable energy forms—both by exploiting the decentralized renewable energy markets being made viable in urban settings as well as by leveraging the energy service market opportunities for energy entrepreneurs. Barriers in terms of volume of demand, affordability, technological viability, etc, can be addressed through the design of dynamic, viability gap frameworks and payment mechanisms supported by the digital economy.

### **In sum**

The governments of the world need to focus their attention on an oft-repeated assertion of industry i.e. that they are ready to implement an aggressive sustainable energy transformation provided they have a stable,

enabling, level and transparent regulatory environment to function in. COVID-19 has demonstrated this nimbleness of industry and entrepreneurship—governments have to respond quickly to keep the momentum going.

Moving forward, Governments need to:

- (a) Concentrate any energy stimulus packages towards the renewable energy sector with the aim of increasing renewable energy independence.
- (b) Encourage rooftop and other decentralized renewable energy systems so as to increase the resilience of electricity supply and ensure favorable market development conditions for such supply.
- (c) Ensure that demand response measures are adequately facilitated through the development of strong digital infrastructures while inter-connected mini-grids provide the reliability of supply needed.
- (d) Incentivize the shift to private modes of transportation, which seems inevitable, towards clean vehicles while encouraging industry to re-design cabin spaces for greater privacy.
- (e) Promote energy and energy services based entrepreneurship models, with suitable incentives, for those with inadequate and insecure access to modern energy.

In a final word—many jobs will be lost in the sunset sectors of energy. We also need to put in place a clear strategy to re-train, re-tool and re-engage this workforce into the new energy economy we have to fashion.

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<sup>i</sup> <https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/May/2019-Tracking-SDG7-Report.pdf>  
<sup>ii</sup> [https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15\\_SPM\\_version\\_report\\_LR.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf)  
<sup>iii</sup> <http://www.realclimate.org/index.php/archives/2017/06/why-global-emissions-must-peak-by-2020/>  
<sup>iv</sup> <https://www.iisd.org/gsi/news-events/reforming-subsidies-could-help-pay-clean-energy-revolution-report>  
<sup>v</sup> <https://iea.blob.core.windows.net/assets/cf477276-f5a5-4130-9395-138035363668/Renewables-2019-Launch-Presentation.pdf>