

## **Policy Review**

### **Impact assessment of COVID-19 on Energy and Power Sector of Pakistan**

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## Key Messages

- Energy is among the most critical enablers of modern life and is uniquely affected by COVID-19.
- Pakistan has observed 15% drop in electricity demand during COVID-19 as compared to the value of same month in previous year. However, this is a negative indicator since it comes at the expense of many lives, un-employment, and an economic downfall. Global financial contraction, COVID-19, and collapse of oil prices will result in a more competitive energy market in Pakistan and is expected to reduce the LCOE of thermal energy (other than coal) sources. This will provide a major challenge to AER-2019 and penetration of renewables in energy mix of Pakistan.
- We must identify the weak links in our supply chain and identify which ones are facing severe operational or financial struggles. Further, relevant stakeholders must identify the available alternatives. However, there is always a possibility that a third-party may serve as a critical failure point in response to COVID-19.
- In short-term, Pakistan must decide whether it will rely on already existing supply chains that are mainly China dependent. Since, many Chinese manufacturers have halted their production, we are under a handicapped power development sector especially for deployment of renewables.
- Although, oil-based generation might appear a more economic option currently, the broader picture is to look at the long-term implications and we should ensure that current and future system remains reliable and the future outlook doesn't get lost in flurry of immediate processes. Instead the government must take challenge to step-up its climate ambitions as promised in Paris.
- Although, at the current stage, it is difficult to predict time span for countering the pandemic, we must ramp up the research to analyze how the future will look depending on the transition during COVID-19 and how to tackle the current issues since it appears that electricity is indispensable.

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## 1. Introduction

Since the spread of Coronavirus to Southeast Asia, parts of the Middle East, Africa, Europe, Latin America, and more recently to the United States, commodity prices have been in free fall. As a consequence of reduced air travel, lower economic activity, and refinery shutdowns, it is hurling unprecedented threats on energy and power sector having major impact on generation and supply as well as infrastructure. Global forecasts for oil demand are getting gloomier and crude oil demand, which is projected to be less than one-half the rate of previous forecasts, necessitates action to curb additional output.

This policy review attempts to suggest short-term actions policy makers and stakeholders can take to respond to the crisis and supply chain challenges from the global spread of COVID-19 – and looks ahead to the long-term solutions for Pakistan.

## 2. Situation analysis of Pakistan

Pakistan is experiencing an exponential curve in the spread of ‘Coronavirus’ also termed as COVID-19. It was declared global pandemic early March. An immense impact of it on Pakistan’s economy might result in closure of a number of factories, shifting of supply chains, increase in mass unemployment, and a sharp decrease in GDP this year. Pakistan went into lockdown at the beginning of March resulting in closure of majority of institutions, lowering industrial and commercial energy demand, reducing air travel, and purchasing of different commodities (Ministry of National Health Services 2020). Now, just like other countries, Pakistan also experienced a deviation from its projected GDP and energy predictions for the year 2020. For global energy sector, COVID-19 effects could not be worse since there was already a collapsing oil market and now, they combined to form some inter-related mutually reinforcing events (Albulesco 2020). Although, it is too soon to predict the depth of pandemic and whether it will hit the world as hard as the global economic recession 2009, we can expect some contractions in the short-term which will then be followed by a catch-up period which will then return us to a long-term path (Kingsly & Henri 2020). However, the policies adopted now might make a difference in outlook we can get and the one we were expecting. Shortfall experienced by European countries has been highlighted in figure 1 (McWilliams and Zachman 2020).

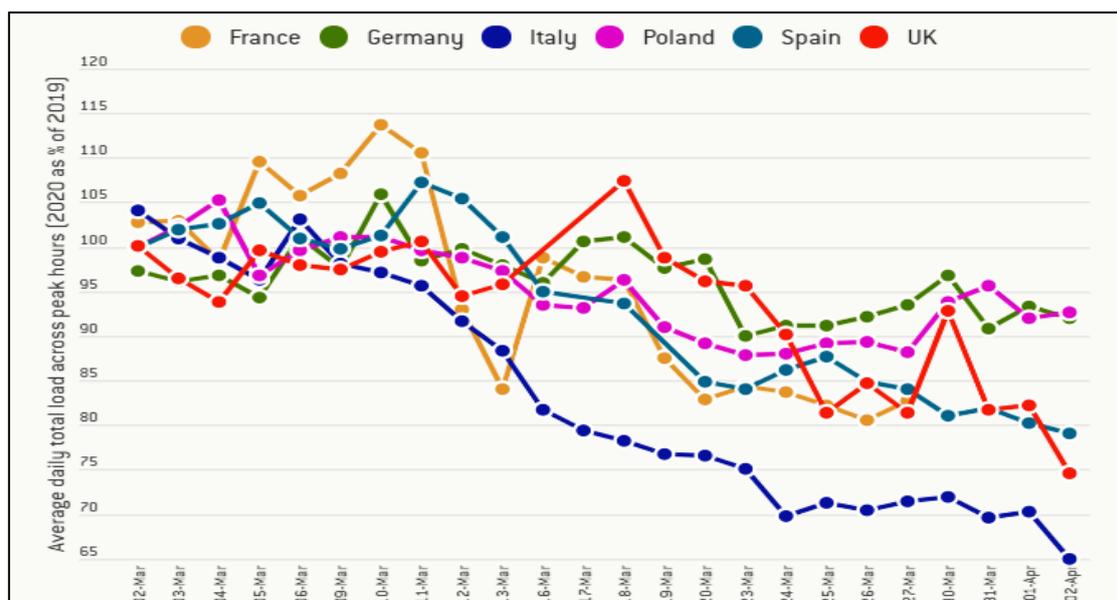


Figure-1: Energy demand of European counties during the peak crisis situation (2<sup>nd</sup> March to 2<sup>nd</sup> April)

Pakistan is also experiencing a similar decline. Though, Pakistan has been granted monetary support from IMF for facing COVID-19, it has received warnings regarding its economic vulnerabilities such as currency devaluation and rising inflation. Hence, proper policy measures must be adopted by energy sector to counter the upcoming crisis in both energy and economic perspective. COVID-19 is increasingly expected to hurt the global growth of zero-carbon energy this year—but much remains to be seen. It would be interesting to see that Pakistan that is undergoing the first phase of virus may result in the emission reduction and reduced demand, however, the second phase of this pandemic will reach a turning point when countries will need to recover from the damage - the point where these policies will matter the most.

All that said, the combination of the uncertainty surrounding the duration and extent of demand destruction, coupled with still growing supply and rising inventory levels, will conspire to delay meaningful price improvement even after economies begin to recover.

Hence, it is imperative to study the impact of COVID-19 on the renewable sector of Pakistan under the following questions: Will developers in Pakistan study it? ; Will there be a relatively short-term disruption or a long-term shift to supply chains?; How will it impact the implementation of ARE 2019 Pakistan?; What options could we see for future development?

#### *Scope and objectives*

##### **Make a base case:**

- Understanding the dynamics of Pakistan's power demand structure and how will it respond compared with pre-COVID-19 outlook of electricity demand. Which sectors will be most impacted and to what extent?
- Impact on renewable energy sector as it has temporarily disrupted supply chains throughout the energy industry
- How consequential or transformative any of these changes are for the energy sector or for climate efforts?

### **3. Impact Analysis**

#### **3.1 Energy demand of Pakistan**

A decrease in energy demand is caused by COVID 19—a pandemic causing many deaths, increase in unemployment, and a large economic dislocation to reduce demand by a small amount and it should be more of a wake-up call for an energy challenge and the complexity for solving it. Before going in to further depth, it should be noted that when things are normal, the drop in energy demand is considered a positive indicator since it describes a better performance for a key indicator like energy efficiencies.

##### **3.1.1 Sectoral impact**

In current situation of COVID 19, the decrease is mainly due to closure of many sectors resulting in a total demand reduction:

Industrial sector: It is the largest energy consuming sector that uses both electricity and other fuels. After government announced a lockdown, a significant number of industries were closed resulting in delayed production of goods and services. Global integrations are another important aspect for closed industries. Both public and private industries experienced a drawback. This further had an economic impact on the workers due to closure of businesses. According to Pakistan worker's administration, more than half million people in textile and garment industry will be unemployed in Punjab alone and they are not even the industries that were held close for too long (Human Rights Watch [HRW] 2020).

**Commercial sector:** Most commercial buildings, offices, stores, shops, markets remained close for a significant period of time resulting in a significant energy drop from that sector. However, unlike industrial, most commercial units like markets, offices, schools, and universities will resume their operations just like before. Industries on other hand might have to look for new trade options, agreements, and contracts.

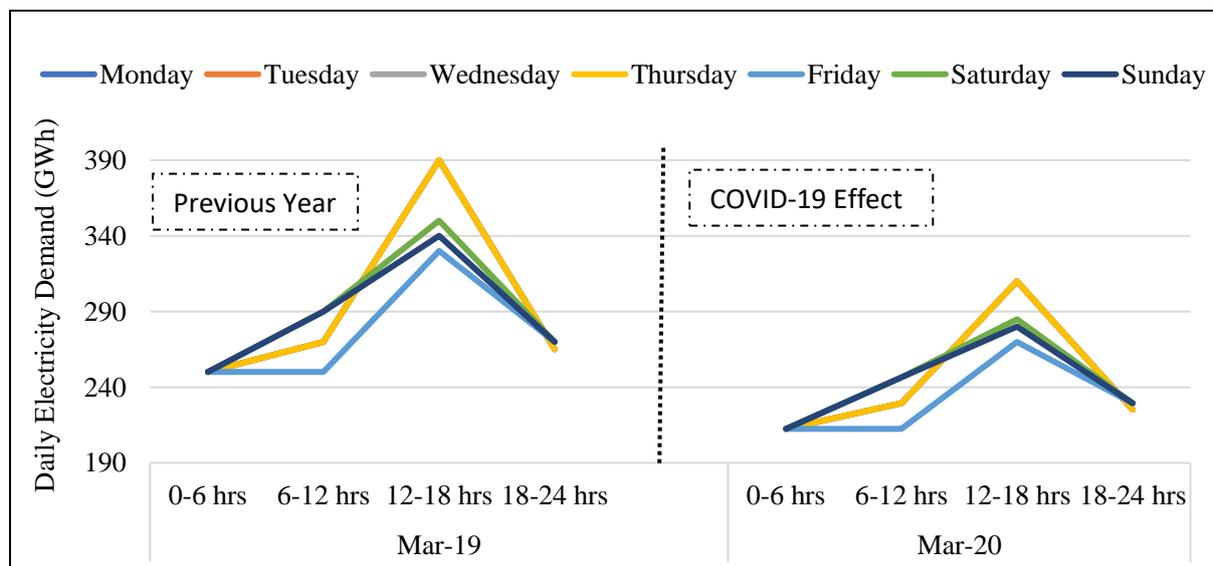
**Transport sector:** COVID-19 provided a further challenge to oil transporters which were still facing the collapse of drop in oil prices. With minimum road transport, reduced freight transport, almost no existent aviation and railways, a downward trend has been observed here as well. However, due to dropped oil prices, the effects on this sector can be relatively long-term.

**Residential sector:** Apparently, residential is the only sector that has observed an increase in energy consumption. This is mainly due to the fact that citizens are residing within the home for the maximum portion of day. Moreover, the workers are also performing in-house jobs such online teaching, e-trades, and etc.

**Power Producing Sector:** Thermal plants using oil as the fuel source have experienced a drop in their revenues. This is mainly because of a drop in oil-based generation and a lower demand. It might look good from the government point of view but not from all stakeholders of the power cycle. Moreover, the other shift power plants have observed in the working on base-load conditions.

### 3.1.2 Impact on Energy demand and production

Although it is hard to predict the expected decline in the energy demand of Pakistan, an effort has been made using below bottom-up approach for electricity consumption in each sector and can be used to describe a demand which we are currently experiencing. Based on the current data set available, decline in total energy (not just electricity) demand can also be predicted (figure 2). - A rough estimate shows a total decline in energy demand of Pakistan will vary from approximately 10-15%.



**Figure-2: Comparison of daily variation of electricity demand in March 2019 and March 2020 of Pakistan.**

### 3.2 Impact on Supply chains and Renewable energy sector of Pakistan

COVID-19 and global oil crisis have badly hit the growth of zero-carbon energy this year. Drop in electricity generation prices due to low cost fuel has made thermal electricity a better economical

option (Masson & Winter 2020). We need to figure how much still remains of it. For, most countries, this crisis has now probably made coal the most expensive thermal energy option (Ramelli and Wagner 2020). In Pakistan, we were supposed to heavily rely on in the coming years. Further, drop in oil prices will slow down the growth of renewables especially solar in Pakistan. The main reason behind it is that Pakistan is an emerging nation where the overwhelming imperative is not to counter emissions but to produce electricity as cheap as possible; even though it could be bad for our Climate Policy. Below mentioned points describe the key impacts of COVID-19 on renewable sector of Pakistan.

Pakistan itself is not a very technologically advanced country. Most of the technologies Pakistan was using in renewable sector were imported from China or other countries. Even as of today, China is leading the world in solar production and wind energy technologies. Since China is a very large economy and is among the countries that were most severely affected from outbreak of COVID-19, a large portion of production has halted thus affecting the whole market. Analysis firm BloombergNEF (Institute for Energy Economics and Financial Analysis [IEEFA] 2020) has lowered their forecast for Chinese battery production by 10 per cent this year and expects the country could see some small dips in solar and wind installations in the domestic market (but they caution this could change if the country is able to ramp production back up quickly enough). No doubt the production will begin to ramp, but it will take a while for them to reach full capacity again. This does not solve the problem for installations or even manufacturing outside China, however. China's aggressive response to the outbreak hindered the movement of Chinese workers, and shipments of parts to Pakistan has been delayed. (Wind turbine parts being an exception as their exports have not been restricted.) The slowdown in exports is already delaying projects in other parts of the world, and further delays could start driving up costs in the short term. Further, the LCOE of oil-based generation has decreased thus making market more competitive for renewables.

#### **4. Conclusion**

Pakistan's energy sector and economy has been baffled by COVID-19 but how and when things will return to normal depends not only on the country itself but also on confinement across the whole globe. COVID-19 has provided an opportunity to developing countries to take an in-depth look towards their supply chains. This is an opportunity for recovery and protection of cashflows through transitions (if necessary), and shifting from declining or under-valued companies.

#### **5. Policy Recommendations**

COVID-19 is a pandemic situation and some indicators are showing that the world might be moving towards another economic recession that will hit it badly, leaving millions unemployed. No one can say it certainly that when this situation will normalize, but as soon as the virus reaches its turning point, policy measures will be needed to shape the future. Both short-term and long-term plans will be required. Major key takeaways and possible short/long term plans are as discussed below:

##### **5.1 Short to Medium Term Steps**

###### **5.1.1. Demand side revival**

- One of the prime steps is to gradually bring the industrial sector back to production, or at least to a minimum operating capacity within week(s) if not in days, to ensure that the energy demand does not diminish. This requires a number of immediate and short-term measures while ensuring safety of workers.

**Table 1** Steps and measures to be taken for demand side revival

<b>Steps</b>	<b>Methodology</b>	<b>Expected Outcome</b>	<b>Responsibility</b>
Industrial Classification in terms of its preparedness to deal with pandemic	<p>SOPs/CHECKLIST:</p> <ol style="list-style-type: none"> <li>1. Industry/company coordinator/responsible focal personal for liaison</li> <li>2. Personal and environmental sanitization facility</li> <li>3. Flexible working hours and shift designs for minimal staff/worker attendance or rotational basis</li> <li>4. Exercising strict health and safety checks of workers/staff</li> </ol>	Schedule of industrial opening according to classification, for production with robust check and control to ensure safety of workers	Industrial Coordination Committee in different cities/sectors having public, health and safety members and academicians, needs to propose implement and supervise the Risk Mitigation Plan.

- Formation and empowerment of Industrial Coordination Committee through regulation or an act with requisite committee responsibilities to formulate SOPs, classify and supervise the industrial sector rehabilitation along with worker/staff health checks.
- Provision of incentivized health insurance to the workers in case of scare, sickness and/or felling to pandemic. The incentive should be the industries complying with the standards set out by the coordination committee.

### **5.1.2. Fuel stocking**

Just as the pandemic threat brings the industrial, transportation and commercial sectors to almost standstill, there is silver lining as once the crisis subsides, the drop in the price of imported fuel can be a massive impetus for several industries especially the energy intensive ones such as fertilizer, cement, metals, ceramics, food, paper, textile and polymers/plastics.

The national as well as commercial petroleum/oil reservoirs should be filled to their capacities since the prices are almost at their lowest at this stage. In addition, fuel storages at power plants, industrial and non-governmental operated storages may also be used through short-term incentivization by offering deferred payment facilities of up to six months to the private entities.

### **5.1.3. POL price reduction**

One key incentive especially for agriculture, food and processing industries (some of which are still running) is immediate & significant decrease in POL prices. This will ensure low-cost processing and possibility of greater consumer buying.

There is a need to decrease and fix POL prices by up to 40% for a minimum of next three months whereas a deferred payment schedule should also be given for diesel, Residual Fuel Oil (RFO), and petroleum products for six months.

### **5.1.4. Reduction in electricity tariff**

With the drop in fossil fuel prices, drop in electricity prices especially for industrial sector shall provide the necessary incentive to ramp up production. This shall bring a number of daily-wage

workers back to jobs and also ease strain on the power grid and its losses. There should be a reduction of electricity tariff by 25% for industrial sector and tariff fixation for next six months.

#### **5.1.5. Human resources retention**

The current lay-offs due to lockdown and economic meltdown may put massive burden on government to provide relief. By generating activity in the demand sector, the workers in the energy production units, energy supply chains, energy accounting and energy budgeting can be retained.

There is a need to incentivize the industry (especially small to medium) to retain semi-skilled workers/technicians & recent graduates/internees through internship programme for one year.

### **5.2. Long-term solutions**

#### **5.2.1. Energy crisis policy through advisory forums**

Energy sector is generally susceptible to demand and/or supply shocks owing to various reasons including pandemic/health care emergencies, geo-political scenarios, politicking and global economics. A national energy advisory committee should be formulated having representation of all stakeholders, policy makers, experts and academicians to frame a policy framework, SOPs and regulations in case of challenges of different nature.

There is a need to constitute National Energy Advisory Committee (NEAC) to propose the national action plan for energy sector by incorporating in it frameworks for power generation, energy efficiency and crisis management.

#### **5.2.2. Renewables - Alternate and Renewable Energy (ARE) policy 2019**

Renewables may be the worst-hit in energy sector. COVID-19 will also have a diverse effect on objectives of ARE-2019 which states that the country needs to have a 20% renewable energy generation capacity by 2025 and at least 30% by 2030. Along with providing sustainable supply, the policy also targeted better environmental outlook. Current lower GHG emissions due to lower energy demand is an eventually a negative indicator as already discussed and this might lead to adoption of resources that will have a poor long-term effect. We must not allow these crises to compromise on our efforts for tackling world's inescapable challenge for clear energy transition and consumption. Large scale investments on development and deployment of clean energy technologies must occupy a central part of government plans since these effects will not be temporary but will have a lasting effect on Pakistan's future. Incentives and policy framework for the renewable sector, energy generation, storage (batteries) as well as transportation (electric vehicles policy) shall remain intact. It may need further incentivization in terms of tax credits/holidays/rebate duration to ensure that the fossil fuel drop in prices may not hamper the green and clean agenda. Steps of clean-energy transitions are important since these volatile market conditions might divert the attention of decision and policy makers. Without proper measures, using cheap energy always leads to consumers using it inefficiently and it further lowers the appeal for buying more efficient technologies without considering the impacts in long-term. Moreover, it could be a good turning point for government to move from in-efficient targeting of subsidies shoes effect is to encourage energy wastage and needless adding to emissions and straining of government budget.

### **5.2.3. Fuel storage capacity**

With the growing population, price surges and emergency situations, national reserves for the fuel stocking are rather limited. A policy and regulatory framework is required to import oil and expand storage facilities through public-private partnership (decreasing PSO monopoly) on a similar basis as of LNG import and storage facilities.

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