



Descriptive Analysis of industry in Covid-19 Pandemic period – a ref. to Gujarat Power Utility

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Abstract: Power Sector is one of the largest infrastructures and it is the lifeline of all other industries, commercial and human activities in the world. In this research paper, which is descriptive in nature, researchers have tried to portray the support of power utilities COVID-19 situation to other sectors and challenges faced by it. The source of data is basically secondary by nature. Gujrat State Public sector power companies like GUVNL Discoms are studied for research. During COVID-19 situation, most people were confined to homes. The economy and businesses were run from home. Besides, when people had more leisure time at their disposal, the usage of electricity (power) was different compared to normal situations. Paper concludes that power industry is a lifeline of all other sectors and it has compulsion to continue running of power for all, and how power utilities have faced various challenges is also discussed in this paper.

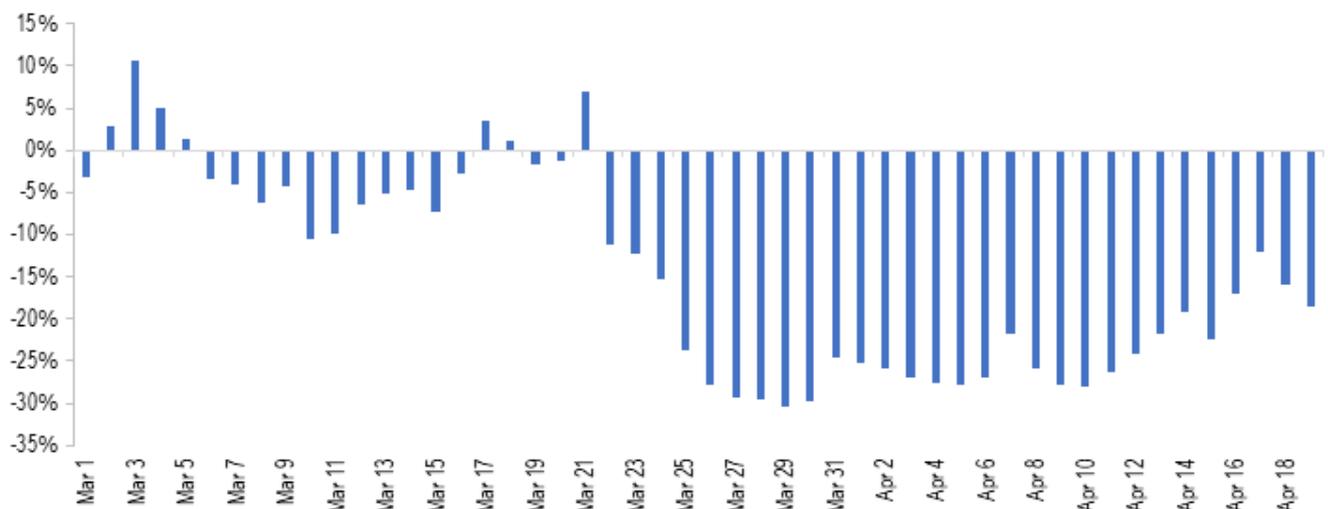
Key Words: Pandemic, COVID-19, Challenges, Mus (Millions of Units), SLDC (State Load Dispatch Center), POSOCO (Power System Operation Corporation), Discom (Distribution Company).

I. INTRODUCTION:

The Government of India enforced a nation-wide lockdown between March 25 and May 3, 2020 as part of its measures to control spread of COVID-19. During lockdown period, several restrictions had been placed on the movement of individuals and economic activities came to a halt barring the activities related to essential goods and services. The restrictions were relaxed in less affected areas in limited manner since April 20 onwards.

Power supply saw decrease of 25% during the lockdown. As electricity cannot be stored in large amount, the power generation and supply for a given day are planned based on the forecast for demand. Months of January, 2020 and February, 2020 had seen increase of 3% and 7% in power supply, respectively as compared to 2019. Power supply saw decrease of 3% between March 1 and March 24. During the lockdown between March 24 and April 19, total power supply saw decrease of about 25%.

Figure 1: % change in power supply position between March 1 and April 19 (Y-o-Y from 2019 to 2020)



Sources: Daily Reports; POSOCO; PRS.

II. NEED OF THE STUDY:

Power is essential for driving economic growth, especially in emerging markets. Achieving Sustainable Development Goal (SDG) 7—Ensure access to affordable, reliable, sustainable and modern energy for all—is a necessary precondition for progress on many other SDGs, including those concerning health, education, industry, sustainable cities, and more. Emerging markets are especially vulnerable to these developments.

Despite greater access to power in developing countries, 789 million people across the globe remain in the dark. COVID-19 has had an impact on the sector, particularly by leading to a reduction of demand, financial stress, and disruptions to the power supply chain.

III. LITERATURE REVIEW:

¹**Saket Surya** (April 23, 2020) has analyzed that, if we look at the consumption pattern by consumer category, in 2018-19, 41% of total electricity consumption was for industrial purposes, followed by 25% for domestic and 18% for agricultural purposes. As the lockdown has severely reduced the industrial and commercial activities in the country, these segments would have seen a considerable decline in demand for electricity. However, note that the domestic demand may have seen an uptick as people are staying indoors.

²**SLDC, Gujarat** (2021) reported that on 3.4.2020, Hon'ble Prime Minister of India appealed all citizens of INDIA for lighting DIYA at 21:00 Hrs. on 05.04.20 and switching off lights for nine minutes to show unity of Nation and fight against COVID-19. Total of 1785 MW load drop (from 8581 MW to 6796 MW) was observed in Gujarat system against anticipated load drop of around 900 MW. The variation in system frequency was from 49.71 to 50.26 Hz. With great coordination and support from WRLDC, GETCO, GSECL, PVT Generators, Central sector generators & All DISCOMS, SLDC – Gujarat managed the event in a very smooth manner without any disturbance

³**Tonci Bakovic, Roy Kroese, Nuru Lama and Elcin Akcura (June 2020)** stated that over the past few months, lockdown measures have significantly reduced electricity demand in the commercial and industrial sectors. The International Energy Agency (IEA) estimates that global electricity demand decreased by 2.5 percent in Q1 2020, and forecasts a 5 percent contraction by the end of the year. In March and April 2020, IFC observed a 15 percent drop in demand, on average, in many countries where it does business. Slower demand growth resulting from falling economic activity prompted by COVID-19 will probably keep oil prices down.

IV. METHODOLOGY:

Descriptive research method has been used for writing this research paper. Interviews and discussions were conducted with company officials and line staffs to have in depth view of the situation. Power sector companies has been actively providing supportive services to all other sectors. Thus, there has been huge work pressure and challenges of work on the employees which has been discussed in this paper.

V. DATA AND SOURCES OF DATA:

- 1) Research is made by direct visits of Power sector Offices & collecting data.
- 2) The Data collected/available from the public documents available from websites of Power Sector Organization/ Companies
- 3) Data collected by personal Interviews with Power sector Offices Staff.

Secondary Study by referring national & international literatures, journals, Magazines, Reports of Government, text books of University, etc.

VI. ANALYSIS:

1. Effect of pandemic COVID-19 on power sector

The power sector is the engine of the global economy, supplying electricity to all other sectors. Goods and services depend on it. In times of crisis, such as the pandemic we have been experiencing in 2020, reliable electricity supply has become critical for sustained medical services and working remotely under lockdown conditions, among other aspects of our new, daily lives.

The power sector consists of generation, transmission, and distribution. Traditionally, power was generated by burning hydrocarbons and harnessing hydropower. However, in recent years, the share of power generated from renewable such as wind and solar has grown, thanks to declining costs and concerns about global warming. Generated electricity moves through transmission lines that are as extensive as highways - power crosses international borders and is traded on global markets. Once the transmission lines reach users in industrial, commercial, or residential areas, the distribution network takes over and delivers electricity to the end consumers.

2. Challenges Faced by Power Sector due to COVID-19.

COVID-19 virus has created havoc and is one of the biggest pandemics of the world. It has claimed life of numerous people and created fear all over. Economy of the world was at the worst. Electricity catering power utilities have played vital role in COVID-19 pandemic. Whereas other sectors faced biggest setback, some of the sectors played a supportive role. Power sector is one of them. Power sector have provided continued & un-interrupted service in parallel to the employees of other industries and helped to keep the economy going. Be it healthcare, education or other sectors; uninterrupted power continued on even in the situation of crises. Thanks to the various teams of power sector working day and night to make it possible.

3. Crisis Management:

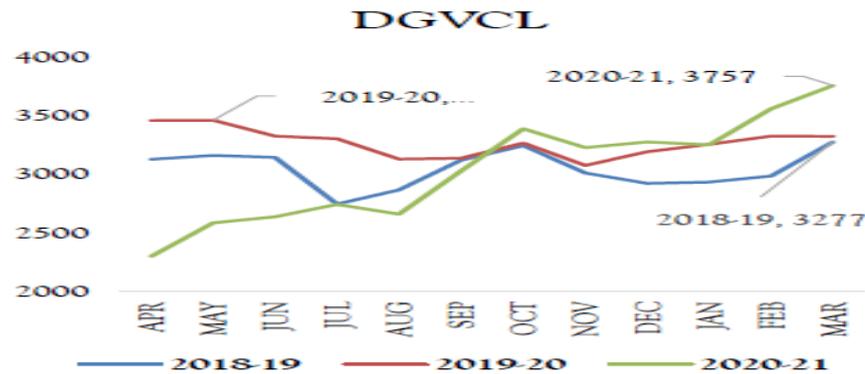
Failure of partial/Complete electricity grid is the major crisis for Grid operator. Black Start/Restoration Procedures are already available in the control room. In the event of a total blackout, there are needs to restore the power supply gradually in predefined stages. If neighboring electricity transmission grids are not available, SLDC can rely on various generating units those are capable of performing a black start. In 2020-2021, SLDC conducted series of tests in power stations having black start resources to ensure that this service was operating correctly. All were successful. The black start mock drills for Ukai hydro Unit No. 3 with Achhalia S/S load was carried out on 15.12.20. Due to COVID-19 pandemic, for the first time a virtual meeting was arranged on 8.12.20.

4. Demand of Distribution Companies Vs. Energy supplied:

COVID-19 pandemic has affected exceptionally at Power Sectors and many of its employees but they put tremendous efforts and stayed focused to mitigate its effect. In year 2020-21, gross generation capacity addition was 6.95% (1967 MW). Energy supplied has decreased by 2.92% as compared to last year 2019-20 because of a nationwide lockdown was imposed for several months as a measure to contain spread of COVID-19. The ever-highest maximum demand catered was 18483 MW. Energy received from renewable sources (Wind and Solar only) was 13988 MUs (12.00% of total energy). The highest wind injection integrated was 4301 MW & solar was 2223 MW without any curtailment.

For the study of Demand of Energy, month wise maximum demand of DGVCL is shown in Fig.2 below.

Fig.2 : Month wise maximum demand of Distribution Companies:



Source: SLDC Annual Report : 2020-21 (Page-14)

During the years before the lockdown the curves of the Demand of Energy during the year is comparatively flatter compared to lockdown period and thereafter. During the year 2018-19, Demand of Energy was around 3000 MW and during the year 2019-20, Demand of Energy was around 3400 MW. Whereas in the start of the lockdown period, in April'2020 it was reduced to 2100 MW, in lockdown period it observed a rising due to domestic consumption of energy was increased due to masses had to stay at home compulsorily. After, lockdown the demand was increased and reached at the level of 3600 MW.

5. Energy supplied to Gujarat DISCOMs

Table-1. Month wise Energy supplied in MUs during last 7 years

Year Month	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Apr	8775	9187	9940	10345	11223	7783
May	9192	9736	10341	10962	11758	9543
Jun	8088	9366	9399	10585	10658	8955
July	8352	8353	7427	9143	10551	9118
Aug	8448	7759	8291	9971	8970	8155
Sept	8824	9105	9168	10622	8829	9367
Oct	9607	8550	10031	11710	9545	11125
Nov	7951	7890	9394	9424	9299	9760
Dec	8238	8449	9211	9953	9995	10486
Jan	8436	8495	9166	9869	9907	10535
Feb	8136	8055	8473	9024	9974	9964
Mar	9089	9340	9898	10351	9421	11819
TOTAL	103137	104285	110739	121959	120129	116610

Source: SLDC Annual Report : 2020-21 (Page-16)

The normal Monthly Energy supplied to Gujarat DISCOMs (i.e. PGVCL, UGVCL, MGVCL & DGVCL) before the lockdown was more than 11000 MUs as per SLDC report shown in Table-1 above and during lockdown period it gone down to 8000 to 9000 Mus. This reduction in Energy supplied was mainly due to shut down of many of the Industrial units. However, the Energy supplied was remained at certain level was due to increase in electricity consumption by Domestic consumers as the people had to stay compulsorily at homes. Now after the lockdown, it has increased even more than it was before lockdown. An increase and dependence in the services of digital devices have posed new challenges to the telecom industry. Energy Consumption is one of the significant issues.

All the Power Sector Company employees right from line staff to Officers engaged in their work to maintain uninterrupted power supply to consumers during the lockdown period. Various upgrades to their existing systems and its maintenance could keep the continuous electricity supply running for the industries, homes and masses in the country.

6. Challenges to power sector due to the Rise in COVID-19:

The COVID-19 wave has disrupted every industry. The power sector has faced many challenges, as electricity is required for healthcare or medical, government and private sector business functions to operate seamlessly. For e.g. continuous uninterrupted power supply is must to ensure that hospitals and medical institutions have access to run there healthcare activities to cure COVID patients and resources necessary to fight the virus.

The sudden disruption of normal business operations caused by the corona virus has forced companies to drive their businesses remotely, including power sector who is the essential service sector and had the responsibility to cater continuous uninterrupted power. In lockdown period, all people & masses had to stay at home but the Power Companies line staff and Officers had to come out to maintain their network & services to cater electricity to people.

7. Constraints with government finances & subsidy:

The revenue collection of states has been severely impacted as economic activities have come to a halt. Further, the state governments are directing their resources for funding relief measures such as food distribution, direct cash transfers, and healthcare. This may adversely affect or delay the subsidy transfer to Discoms.

The lockdown has led to a halt on commercial and industrial activities while people are staying indoors. This has led to a situation where the demand from the consumer segments who cross-subsidise has decreased while the demand from consumer segments who are cross-subsidised has increased. Due to this, the gap between revenue realized by Discoms and cost of supply will widen, leading to further losses for Discoms. States may choose to bridge this gap by providing a higher subsidy.

Moratorium to consumers: To mitigate the financial hardship of citizens due to COVID-19, some states such as Rajasthan, Uttar Pradesh, and Goa, among others, have provided consumers with a moratorium for payment of electricity bills. At the same time, the Discoms are required to continue supplying electricity. This will mean that the return for the supply made in March and April will be delayed, leading to lesser cash in hand for Discoms.

The challenges that come with current changes can be tackled in many different ways.

- 1) **More Stable power supply & network:** As the power sector staff & Operators also had health issues and to maintain their own health, it was also necessary that they should not come in to public contacts. A stable healthy power system network could be the beneficial for both operating staff as well as public.
- 2) **Safer Bill payments:** Use of online payment was safer & convenient during Covid-19 pandemic period, as it could avoid to come in public contact, touching of currency notes.
- 3) **Counting on Enterprise Features such as Video Conferencing:** For the continuity of the business during pandemic, power distribution companies solely relied on video conferencing and webinars, this resulted in long travelling of Officers for attending meetings & trainings. Due to such benefits, even after lock down now such meetings or trainings through video conferencing and webinars has been continued. 4. **Remote Problem-Solving.** Delivering on-site support during the pandemic is pretty difficult – not because of the resources, but because of the increased risk those technicians and their clients are at risk of getting exposed to COVID-19. Reinventing on-site support with the use of videoconferencing tools or augmented reality techniques can help both parties maintain safe social distancing while addressing any technical issues that may arise.
- 4) **Changing the Methodology for Field Service Engineers, While Protecting their Health:** On-site operations require radical reinvention if they are to adapt to the “new normal”. The Field Service Management software tools are required to be rich in features so they can support the new reality and service demand.
- 5) **Challenges Faced by Employees:** Power sector is a people-intensive industry, with a seasoned workforce that includes teams in offices, on trucks and in retail storefronts. If they are forced to work remotely, that could impact productivity.

Elements of power network cannot be operated remotely.

a) **Power System Engineers:** Power system engineers have had to address the increased power network requirements of their customers. Further, the opportunity areas are identified for the electricity & it's service providers that have emerged in the wake of this coronavirus pandemic. Complaints during the lockdown are resolved on online registering instead of physical visit to Offices and registering in person. System staff tried to maintain their network to move forward with their business processes.

b) **Field Technicians:** Also known as electricity line staff, those who work in this field usually handle electricity installations maintenance and repairs. Their duties include planning network installations, troubleshooting outages, testing circuits and preparing installation diagrams. They must possess troubleshooting and electrical as well as strong customer skills. Front-line employees — such as retail customer representatives or field technicians who regularly visit customers — may have concerns about COVID-19 exposure and transmission. To overcome this situation, steps which are considered:

Assess how workloads could increase or decrease as a result of the outbreak.

- Determine which employees can work remotely without compromising productivity.
- Prioritize remote technology capabilities to transition workers to remote work while maintaining productivity.
- Assure the safety of employees who need to continue working on-site by continually updating and communicating risk-mitigation guidelines.

c) **Critical Role:** During the lockdown period, several organizations shifted to work from home, virtual meetings and video calls. Therefore, the importance of electricity services has grown manifold in order to mitigate the pandemic impact and has necessitated the continuity of system network & power supply. So, the role of electricity service providers became more critical during such unprecedented crisis. It was important for the Power Distribution Company to ensure minimum disruption to networks, and a committed effort was required to preserve the health and

wellbeing of the people. System networks of underground cable network & RMU (Ring Main Unit) provided power supply minimizing interruptions, and strengthened critical networks, providing network operators, governments, and establishment's much-needed support for remote work practices and extending essential services to the remotest corners of the country.

VII. FINDINGS:

The following results have been drawn on the basis of the brief paper presented above:

1. The pandemic has brought several benefits and drawbacks to various industries, including power sector.
2. While other sectors faced severe set-back during pandemic, power sector had a different scenario. The power sector has a lot of potential as a result of this Pandemic.
3. The use of internet for meetings through video calls, zoom meetings, Google meetings, and other means, it has aided for saving in time of Staff & expenses thereof and therefor to continue their operations after pandemic.
4. A halt on commercial and industrial activities in lockdown led to a situation where the demand from the consumer segments who cross-subsidize has decreased while the demand from consumer segments who are cross-subsidised has increased. So, gap between revenue realized by Discoms and cost of supply widen, leading to further losses for Discoms.
5. Use of online payment for bill payment is increased
6. Apart from many hurdles, the power sector has managed to provide good services by providing a more reliable and continuous uninterrupted power supply in pandemic situation, remote problem addressing, and field support, among other things.
7. Employees in the business, such as field technicians and engineers, have faced obstacles such as network issues, maintenance and repair, and preventing customer fraud, among others, while delivering service.

VIII. CONCLUSION.

On the basis of the detailed study on power sector, it can be concluded in pandemic COVID-19, power sector turned out to be a blessing in disguise for all other sectors. It gave a ray of new hope during the doom phase of recession. It kept economy at least crawling, if not running. The industry faced tremendous challenges during the pandemic phase, but it kept the wheels of economy rolling. The power sector thrived during Covid 19, being a must run service sector & life line of all sectors.

IX. REFERENCES

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