

White Paper on **ENERGY SECTOR**

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Centre for Public Policy Research
Breaking Business Barriers
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SECTION 1 - INTRODUCTION

1.1 Introduction to Ease of Doing Business

The “Ease of doing business” is a World Bank index which is widely used to rank 189 countries for their present business laws and regulation environment every year. The index, however, does not take into account general conditions like macroeconomic indicators, market proximity, infrastructure etc. Further, the “Ease of doing Business” ranking is characterised by the average of 11 sub-indices like starting a business, getting credit, electricity, registering property so on and so forth. A higher ranking indicates efficient and simpler regulations for business and strong protection of property rights. This index not only identifies the source of the obstacle for doing business in a country, but also serves as the basis for policymakers to compare the regulatory environment for business across countries and design more compelling regulatory reforms for future.

India is one of the fastest growing economies in the world and has become one of the most attractive investment destination in the world. On analysing “Ease of doing business” index for 2016, we observe that India has moved up its ranking to 130, up by 4 units as compared to the previous year. The improvement in ranking is mainly because of the ongoing reforms and the 2 major drivers are, “Distance to frontier” sub index where India outperformed all the South Asia countries since 2004. The biggest improvement came from “Getting Electricity” sub index where the ranking jumped to 70 in 2016 from 137 in 2015. In order to complement its economic growth, India has to set major reforms to improve “Ease of doing business” ranking and attract more investors.

While Government of India (GOI) is constantly encouraging investments, the Department of Industrial Policy and Promotion (DIPP) is commending the government's initiative by taking several initiatives to ease doing business in India. The future reforms taken by GOI must ensure that India is on equal footing amongst other countries in terms of flexible, favourable, efficient and transparent business environment.

With this in view, the British High Commission (BHC) has initiated a study called “Breaking Business Barriers” for various sectors in India which focuses on stakeholder engagement and arriving at insights around business barriers. Specific recommendations have been identified for each of these sectors. The main objective of this report is to emphasize on the retail sector and the various barriers faced by businesses. We hope that the findings of this report would help bring the issues of retail sectors to the forefront and also serve as a reference point for the imminent need to pursue reforms in business policies and processes.

1.2 Introduction to Breaking Business Barriers

Centre for Public Policy Research (CPPR) in association with the *British High Commission (BHC)* has taken up an initiative '**Breaking Business Barriers**' aiming to curtail the regulatory barriers in

setting up, operating and exiting a business in the state of Karnataka, Kerala and Tamil Nadu. The initiative focuses on easing the business climate in seven sectors: Drugs and Pharmaceuticals, Education, Energy, Information Technology (Hardware & Software), Infrastructure, Retail and Manufacturing.

The initiative intends to enhance the development of a business-friendly environment in these states, by removing the regulatory barriers in doing business. The collaboration with the stakeholders has helped to identify the issues and challenges faced by them in operating the business and work towards finding a solution. In this regard, CPPR organized round table meetings with the Government representatives and business community in order to understand all relevant information regarding policies, taxation regimes, rules and other general information for doing business.

The website *EasyBiz* (easybizindia.com) India is created for the purpose of giving insights into the policy framework in the three states and measure state competitiveness. The website offers an interactive portal for the entrepreneurs to flag the issue faced by them in operating the business and work with one another to resolve the issue. The portal also has a clear process flowchart of the steps involved in starting a business (licenses, NOC, certificates) in the three states

SECTION 2 - SECTOR OVERVIEW

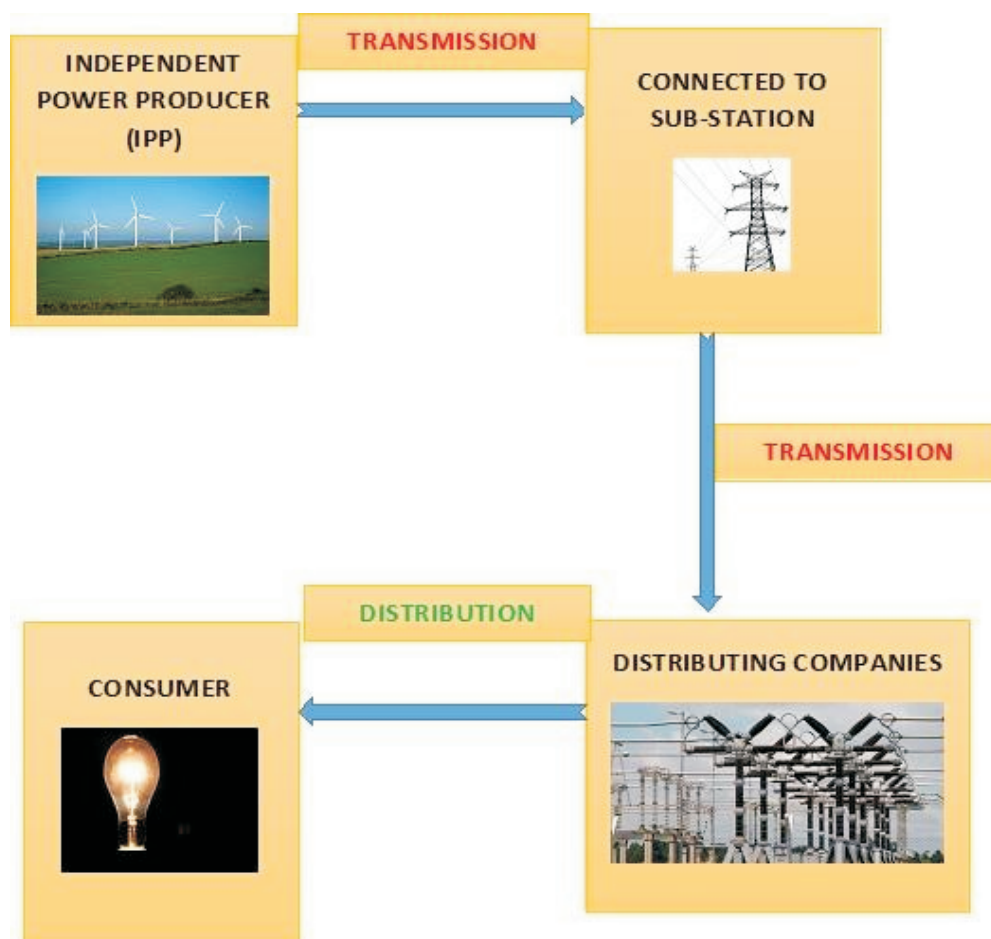
2.1 Definition

The Ministry of New and Renewable Energy (MNRE) has defined grid connected renewable energy *sources* as including small hydel projects (<25 MW), bagasse cogeneration, biomass power, urban and industrial waste power, wind and solar power. The Australian Renewable Energy Agency defines Renewable energy as the “energy which can be obtained from natural resources that can be constantly replenished (ARENA, 2015).”

2.2 Renewable Energy in India

According to *Report on India's Renewable Electricity Roadmap 2030*, India has added large-scale conventional power resources (NITI Ayog, 2015). Expansion of renewable energy resources could increase India's energy security while reducing its dependence on imported fuels, states a report *Development of Solar and Wind Power in Karnataka and Tamil Nadu*.

Figure 1 - Transmission of Energy



The above flow chart explains the energy model in India. The Independent Power Producer (IPP) generates power from the non-conventional sources and transmits it to the substation. From our interaction with the stakeholders during the focus-group interviews organised as part of the research exercise, we learnt that the IPP needs to obtain several licenses and permits before starting to generate power this poses a barrier to them setting up their business. Likewise, the IPP needs to bear the cost of transmitting power to the nearest substation. The present lack in infrastructure, when it comes to grid connectivity and transmission lines, poses a major challenge (ADB, 2013).

The IPP signs a Power Purchase Agreement (PPA) with the Distributing Companies (DISCOM) enabling the IPP to sell the power generated. At present, the poor financial health of DISCOMs are causing payment delays to the IPP for the power they sell. Barriers erected by DISCOMs, which restrict the sale of power to a Third party, lead the IPP's to face several challenges to sell the power generated in the open market.

Table 1 shows the capacity of renewable energy produced in India.

Capacities in MW

Source	Current installed capacity (March 2015)	Target as per 12 th Plan (March 2017)	Revised Targets till 2022
Solar Power	3,383	10,941	1,00,000
Wind power	22,645	32,352	60,000
Small Hydro	4,025	5,495	5,000
Biomass	4,183	6,125	10,000
TOTAL	34351	54,914	1,75,000

According to the report by MNRE, India expects to install 100 GW of solar capacity by 2022. In this endeavour, Rajasthan is leading the way with a total installed solar capacity with 1047.1 MW, followed by Gujarat with 1000.25 MW due to their geographical location in the tropics (MNRE, 2015).

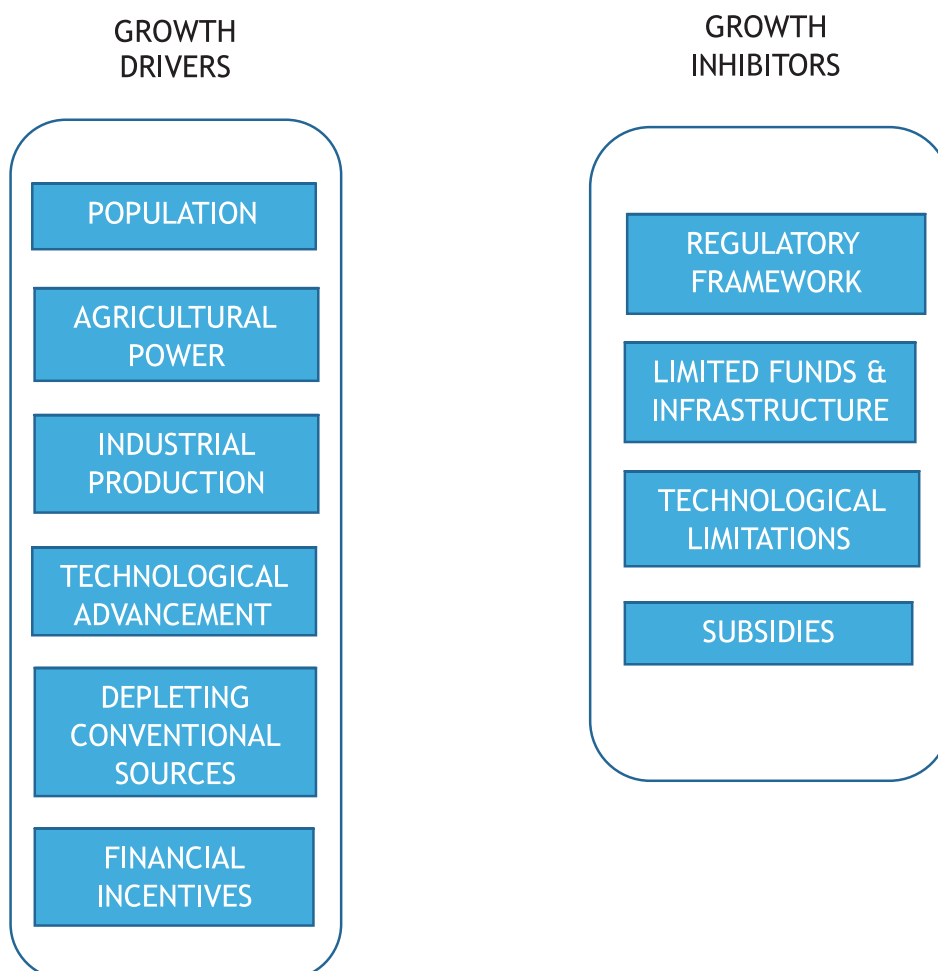
The Wind power programme in India was initiated towards the end of the Sixth Plan, in 1983-84. The MNRE has set the target for Wind Power generation capacity by the year 2022 at 60,000 MW (MNRE, 2015). Tamil Nadu, Gujarat, Karnataka are the top 3 states in the production of wind energy.

With respect to the small hydel power plants, the MNRE has given autonomy to the State Nodal Agencies to encourage development of small projects by both the public as well as private sector. As on November 2015, the installed capacity of the Small Hydro Projects is 4000 MW. Karnataka has the highest installed capacity of small hydro in India, followed by Himachal Pradesh.

Biomass power generation in India is an industry that attracts investments of over ₹600 crores every year, generating more than 5,000-million units of electricity and yearly employment of more than 10 million man-days in the rural areas. As of 2015, a total of 4183 MW of bio-power has been installed in India. And Uttar Pradesh, Maharashtra, and Karnataka lead the way.

2.3 Drivers and Inhibitors

India sources about 16.2 per cent of the electricity used from renewable energy plants. (REN21, 2015). Figure 2 explains the drivers and inhibitors in the renewable energy sector.



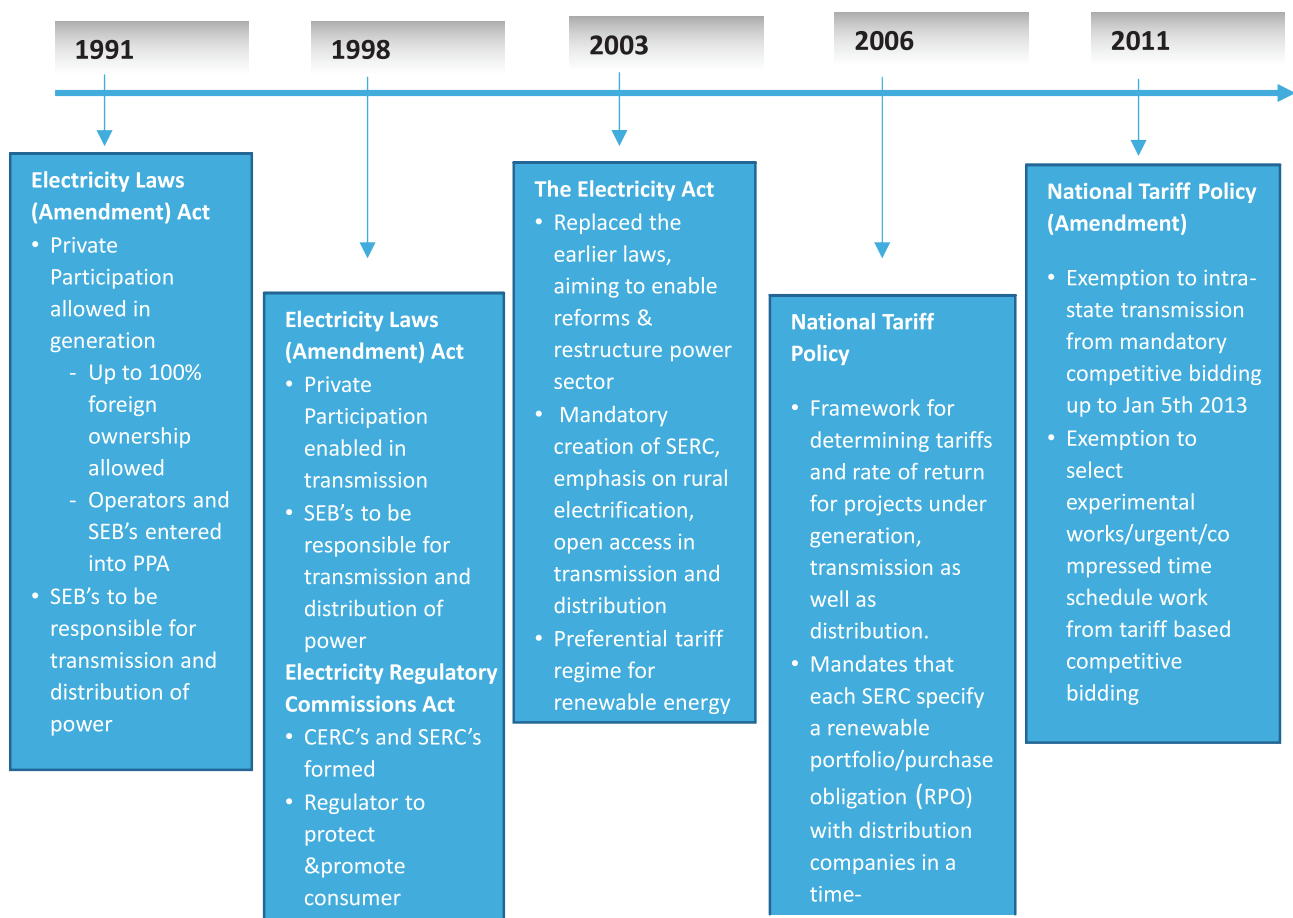
According to the report *Energy: Indian Demand- Supply Gap*, the factors mentioned under growth drivers, above, should have ideally driven the increase in investments in RE in India. The renewable energy growth is, however, curtailed by policy inconsistencies and entry barriers has stalled the growth of the RE sector. This sentiment was expressed by the stakeholders during the focus-group interviews conducted in Karnataka, Kerala and Tamil Nadu said that at the state level the inhibitors continue to pose a challenges.

Karnataka and Kerala have formulated Renewable Energy Policy to encourage IPP to generate power. The states have a nodal agency under MNRE which promote renewable energy production in the state and provide opportunities for investments. The nodal agencies however are not acting as a single window for the clearances. The IPP in the states do not get required clearances to operate a power plant. The Wheeling and Banking charges, low tariff, and lack of net metering are few of the ground level challenges faced by the IPP in the three states,

2.3 POLICY INITIATIVES

World's first and only Ministry committed solely to the development of renewable energy resources was established by the GOI in 1992. Indian Renewable Energy Development Agency (IREDA) was established in 1987 to provide financial assistance for renewable energy and energy efficiency projects (ADB, 2013). Apart from these two major initiatives, GOI has come out with many facilitating measures to realize the enormous renewable energy potential in India explained in Figure 2 (GOI, 2015).

Figure 2 - Major Policy Initiatives in Indian Power Sector



Recent Initiative taken by the Government:

- UDAY: The Ujwal DISCOM Assurance Yojana (UDAY) scheme was launched in 2015 to restructure the financially stressed DISCOMS (Business Line, 2015). Since the existing DISCOMS in India are making losses, the supply of power is adversely affected. This also goes against the objective of achieving 100 per cent rural electrification and sourcing energy from clean energy sources (PIB, 2015).

- **National Tariff Policy:** In order to achieve 24/7-power supply and rural electrification, an Amendment was passed in January 2016 which looks to promote renewable energy and incentivise the distribution companies to buy from clean energy sources (The Economic Times, 2016). The Amendment comes as a reprieve for state utilities which are burdened by a fixed-cost payout for generation capacity since they have tied up under long-term agreements.

SECTION 3: WAY FORWARD

The following section discusses the prevailing issues in the renewable energy sector and recommends suitable research-backed solutions to tackle these issues.

3.1 Entry

Issues: Below are the issues the sector faces with respect to starting a business

- **Land Availability:** Land for setting up a renewable energy plant is being mandated to be allotted by the respective state Governments. The time taken in acquiring and convert this land (agricultural land to non-agricultural purpose) is a major cause for the delay. RE developers in Karnataka have spoken about that land being the major requirement for RE generation is always limited and causing challenges. According to a report by CSTEP, the power projects which are allotted by the Government get stalled because of the delay in the land conversion process by the Government
- **Credit Availability:** Renewable energy projects needs higher initial investment. According to the investors who were interviewed, higher financing costs are discouraging renewable energy investments. The investors were of the opinion that banks have sector limits on the credit lent out. Here, renewable energy is covered under the Energy sector which already has a high borrowing demand.

The renewable energy sector has no access to credit due to the novelty of the sector, nascent state of technology, and uncertain regulations. Longer tenure debt for RE projects is unavailable in India and also infrastructure financing in India is dominated by bank credit since the corporate bond market is under developed (CRISIL, PHD Chamber, 2015). This creates a barrier to credit accessibility.

- **Licenses and Approvals:** Though the challenge of licenses are common across sectors, the RE sector faces these obstacles way ahead of starting the project. From the study we undertook, we were able to list down several clearances mandatory for a RE entrepreneur. These were, as follows: Land approval, NOC from Energy Department, NOC from LSG, Approvals from Transmission and Distribution companies, among others. All the licenses and approvals take

approximately 6 months to 1 year, for, all of them need to be submitted to the departments individually. For instance, prior to the approvals, an entrepreneur looking to break into the wind energy sector, with respect to one project needs to conduct a Wind Mass Study (FN) for 3 years which is a matter of high investment. Majority of the times, even after the licenses from transmission companies have been obtained, the renewable energy plants have no access to transmission sub-stations (GWEC, 2012).

- **Reverse bidding:** In the case of Solar projects, states allocate projects through reverse bidding which is a discouraging step if one looks to attract investors. Our study suggests that in Karnataka, several projects allocated through competitive bidding are stalled or progressing at a slow pace. This view is extended by another study too. According to a study conducted by *Deloitte in 2015*, reverse bidding has not helped India to attract investments in the solar sector. This happens because DISCOMs can allot only limited capacity to the IPP since the solar purchase obligation (SPO) forms a very minimal percentage of the total power the DISCOMs purchase.

The facilitation fees which needs to be paid to the Nodal Agency is an average of ₹1 lakh per MW. This adds up to the initial investment cost, which according to investors is a huge problem.

Suggested reforms:

Administrative Reforms:

- The Government should allot renewable energy projects only after the land conversions have been completed. This would also avoid the stalling of the renewable energy projects because of the issue of land conversion. The land allocated for the project should be provided with infrastructure for grid evacuation to avoid delays in transmission. For instance, for the wind energy projects, the state nodal agencies should offer GIS based data showing the potential site for wind energy production along with the predicted output. An integrated GIS data base for wind energy site selection has been proven successful in US, Australia and Germany (ARENA, 2015)
- The State Nodal Agency which has been identified by MNRE should provide a Single Window Clearance for all the renewable energy projects. The Andhra Pradesh Government has introduced Single Window Clearance for renewable energy project. New & Renewable Energy Development Corporation of A.P Limited (NREDCAP) has been designated as the nodal agency to for facilitating Single Window Clearance of all Solar and Wind Projects. NREDCAP would ensure timely approvals from Transmission Company, Distribution Company, and Electrical Inspectorate on behalf of the developer for getting the requisite approvals for expediting the execution of projects. In addition, NREDCAP would also engage with relevant departments as a facilitator for allotment of land for wind power projects

- *Renewable Energy Siting Study*, a report discusses the efficiency of a one-stop shop agency which offers single consolidated approval in the US (Noble & Wickersham LLP, 2009). A study conducted in Madhya Pradesh shows the ease of land acquisition, associated clearances, transmission pathways and certainty of power purchase are crucial factors for investment decisions (Business Standard, 2014). Hence, it could be concluded that Karnataka, Kerala and Tamil Nadu should provide for a single window clearance under the nodal agencies. This will help in faster clearance from the agencies by providing licenses to set up a renewable energy plant.

Operational Reforms

- The SPO for the DISCOM needs to be increased from time to time. The IPP should be able to sell the power to third party when the DISCOM fails to buy power from IPP
- To develop Solar Park under the PPP model, the government should adopt the Swiss Challenge Model (SCM) which is being tested out in MP. Though the success of SCM cannot be assessed at this juncture for RE project, studies show that adopting SCM in infrastructure projects (housing and roads) have been successful in Andhra Pradesh, Gujarat (Live Mint, 2015). The success stories show that the model ensures that a private developer is always ready to submit a proposal
- Renewable energy projects should be funded through green energy bonds. The green energy bonds are lesser known in India, but definitely a tool to finance the renewable energy projects in the country. The companies generating renewable energy should be allowed to raise capital by selling green bonds. In December 2015, SEBI came up with specific guidelines for the investors to raise funds through green energy bonds. It proposed that an issuer would have to define and disclose in their offer documents projects identified as 'green' and the quantum of funds to be spend on the projects or assets (The Economic Times, 2015)
- The proceeds of green bonds should be credited to escrow account and should be utilised only for the stated purpose as in the offer document. According to a study by Clean Energy Finance Corporation (CEFC) green energy bonds have been successful and a critical tool in Australia to increase the RE investment (2015).

3.2 Operate

- **Issue of State Electricity Regulatory Commission:**The State Electricity Regulatory Commission in every state continues to regulate the prices of renewable energy in the market. The commission sets the price at which the Distribution companies buys the

power from IPP; also sets the per unit electricity price at which the distribution companies sell power to the consumer. The tariff varies in every state and is not consistent with the guideline of CERC (ICRA, 2015).

The developers interviewed for the study were of the opinion that, DISCOMs lobby the SERC to offer a low price for the energy to be purchased from IPP. According to OECD, the main rationale behind setting up a regulatory body is to avoid market failure, check anti-competitive practices and promote public interest. However, during the study it was observed that the Electricity Regulatory Commission has control over the price and been functioning less on regulatory grounds. The reason which was stated by the developers is the persistent refusal by the political class to view electricity as a private good and therefore empower the regulators properly. Reports show that the very objective of setting up a regulatory framework was to keep check on all the activities related to electricity business including efficiency. But the reality is that there even there continues to be distribution and transmission losses even after the regulatory has been set up.

- **Issue of Distribution Companies :** The IPP sign a Power Purchase Agreement (PPA) for 10 years with the Distribution Companies to distribute the power generated by them. The distributing companies delay the payment for the IPP since they are making enormous loss (EIA 2015) due to the following reasons -
 - Loss in distribution lines
 - Free and unaccounted power to agriculture

The study conducted by EIA shows that India has the highest transmission and distribution loss of 20 per cent which is much higher than the world's average of 8 per cent (EIA, 2013). During the study it was observed that one major reason for the unwillingness of private players to enter the sector is regulatory uncertainty, especially regarding tariffs. For example, prior to elections, governments often grant free power to farmers for electoral reasons. The Electricity Act allows the state governments to provide subsidy to deserving consumers but the respective governments have to pay the subsidy amount in advance to the utility. In practice, the governments provide subsidy but do not make equivalent payment to the utility which has been adversely affecting its financial health and quality of service.

- **Plant Load Factor:** During the study it was observed that the renewable energy plants run on a very low Plant Load Factor. This is one of the operational challenge faced by the

IPP. According to the investors, the renewable energy plant has lower Plant Load Factor when compared to the conventional power plants (coal/nuclear). The renewable energy source depends on wind/solar for power generation which is seasonal (Renewable Energy and Electricity, 2016). The reason for the low PLF is a result of the failed infrastructure for the non-conventional sources of energy. The wind/solar energy plants do not operate to their maximum capacity due to the lack of infrastructure for generation of energy

- **Cross Subsidy** : The IPP face challenge when they intend to sell their power in open market. During the interviews, we learnt that open access is guaranteed to all consumers above 1 MW; however, utilities restrict this by refusing to grant applications. Often, grid congestions are cited as the reason.

Utilities also lobby at the State Electricity Regulatory commissions (SERCs) to increase open access changes - especially the Cross Subsidy Surcharge (CSS). India's power tariffs are structured in such a manner that industrial and commercial consumers subsidize residential and agricultural consumers (TERI, 2014). When industries and commercial clients sign private power purchase agreements (PPAs), the utility loses out on these high value consumers. This is why a CSS is levied on consumers that shift to open access.

- **Net Metering** : Net metering continues to be an issue for the producers of roof top solar power. The net meter is not available with the State electricity board and needs to be pre-ordered, which takes an average of 6 months for installation and operation (Bridge to India, 2015)

The stakeholders who had solar roof top installed were of the opinion that the net meter available in India are of European standards and fail to operate when there are power cuts, hence there is no record of power generated from solar during that time period.

- **Availability of trained manpower** : According to a survey conducted jointly by the Council for Energy, Environment and Water (CEEW) and the Natural Resources Defence Council (NRDC), the renewable energy in India is lacking skilled manpower (2015). The installation, operation and maintenance of Renewable energy systems need specific skills and knowledge. The findings of the report *Green Jobs - Towards Work in a Sustainable, Low-Carbon World* show that an approximate of 80,000 people are employed in Wind Power projects in Germany as opposed to 10,000 people in India (2010). Overall, the industry employed around 79,000 full time people as of 2015, but would need 1.3 million by 2022 to achieve target of 100,000 MW of solar power capacity and 60,000 MW of wind power capacity by then (Economic Times, 2016).

Suggested reforms:

Administrative reforms

- The price at which energy is bought from IPP should be left to the decision of market. This will increase the ROI for the IPP and is an encouraging factor for investment (ADB, 2013). The main objective of the Regulatory Commission should be to provide a fair and transparent environment that promotes a level playing field and facilitates fair competition in the market
- **Net Metering:** The DISCOMs should customize policy to offer net metering facility to the consumers. The study conducted in Germany shows that net metering has been a success in improving renewable energy (German Philippine Chamber of Commerce and Industry, 2016). Offering net metering facility will encourage the rooftop solar in the states. The states should formulate a policy guideline to help the consumers install net metering and provide license to the manufacturers from whom net metering could be sourced. This will enable faster installation of net meters.

Operational reforms

- Cross Subsidy Surcharge should be eliminated by the states. Studies conducted in this regard show that removing of cross subsidy will help price discovery in the market (The Hindu, 2013). This will offer level playing field for the Independent Power Producer to sell the power generated in the open market.

The market pricing mechanism and removal of Cross subsidy surcharge will pave way for Open Access in the energy market. Several reports have shown that cross subsidy surcharge have been eliminated since the time the market allowed for Open Access (IREDA, 2012). The distribution companies should offer faster clearances for consumers who opt for third party power purchase from the IPP; thus giving an option for the consumer to choose from different power generators.

- **Separate feeder for agriculture:** Separation of electric feeder for agriculture will ensure uninterrupted power to households and industries. This will reduce the transmission and distribution losses. In Gujarat, this model helped to reduce the transmission and distribution losses to 19 per cent in 2012 from 35 per cent in 2009 (TERI, 2014).

The reduction in distribution losses will benefit both the Independent Power Producers

and the Distribution companies. The IPP would be able to get timely payment from the distribution companies for the renewable energy they produce.

- The subsidies given to the users of power should be on the books of the State so as to avoid more stress on the books of accounts of the DISCOMS. Studies have shown that Direct Benefit Transfer has been a success in the case of LPG (Swarjya, 2015) hence, we recommend that the subsidies on the electricity should be directly transferred to the subsidiaries bank account
- Universities in Sweden and the US have gained from offering renewable energy education in college level (Broman, 1994). Few of the existing universities and colleges in India should offer skill development programmes for basic skills for constructing and commissioning of renewable energy projects. According to Council on Energy, Environment and Water report, improved training and certificate programmes should be offered in all states for varying background

3.3 Exit

Issue

The RE policy and the Solar policy in the states have not defined steps for exit by the entrepreneur in the sector. The IPP's face issues while withdrawing from the project, which create exit barriers in the sector.

Suggested Reform

The RE policies in the three states should offer provision for exit steps as in the case on Madhya Pradesh. It will benefit transfer/withdrawal from the project on the investments already made.

SECTION 4- CONCLUSION

The study has shown that the existence of the Electricity Act 2003, the Tariff Policy 2006 gave a significant push to the development of renewable energy sources by setting a deadline to the SERCs for implementing RPOs. The renewable energy sector in India needs an accelerating pace of growth and transformation through the coming years to achieve the target set for 2022. The solar policy and the renewable energy policies which are formulated by each states needs to be implemented at the grass-root level to promote the generation of the renewable energy. The study suggests that national policies create an environment for renewable energy development, but emphasizes that the pace of development will largely depend on each State's policy and easing regulatory barriers. The requirement to generate renewable energy is driven by the need to enhance the energy security and fuel diversity and of course to meet the ever increasing energy demands in the country.

The report has suggested reforms in the line of regulatory barriers which come in a way for the generation of energy from the clean energy sources. Along with the regulatory barriers, the age-old technology, low investment has curtailed the growth of the sector in the past years. However, this could be considered as an area for investment and the state governments should take pro-active steps to tap the potential investors in improving the infrastructure for the IPP's. Little has been achieved on the context of transmission and distribution loss, which ultimately causes delay in payment to the IPP. Besides, the weak financial status of the DISCOMs only makes the situation worse.

At present India's renewable energy sector needs growth on two paths; one, tapping wind, solar, biomass, and hydro to increase generation, two, to develop the infrastructure to improve the transmission and distribution facilities for inter-state and intra-state electric grids.

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