Chapter II

REVIEW OF LITERATURE
First chapter deals with the conceptual frame work of the present research problem and primary matters regarding the research. It had the statement of the problem, hypothesis, objectives of the study and the limitation of the study. But, for any specific research to occupy the place in the development of a discipline, the researcher must thoroughly familiar with both previous theory and research. To assure this familiarity a review of the research literature is done. A Survey of related studies was undertaken by the investigator to get an insight into the work that has already been in the field of this investigation and also to get suggestion regarding the ways and means for the collection of relevant data and interpretation of results. An attempt is made in this Chapter to review the existing literature on the subject of research.

The available literature related to the present research work studied by the researcher is divided into four categories, namely, (i). Literature on development and evolution of the power sector, (ii). Literature on problems and challenges of power sector in terms of generation, transmission, distribution, etc., (iii). Literature on power sector reforms and (iv). Literature on power sector after reforms. The studies have been analyzed by keeping objectives, of the study to drawn the conclusion to stren
then the rationale of the present research.

**Literature on development and evolution of the power sector**

**John Byrne YU-MI Mun (2001)** explained that electricity was first introduced in the 1880s in the United States and Europe, its use expanded dramatically throughout the world, transforming almost every aspect of daily life. It is now essential to the operation of most modern technological systems, and, for this reason, has attained the status of a ‘metatechnology’. The inner logic of this metatechnology has shaped contemporary development patterns – grid expansion and urbanisation are nearly synonymous; national and local politics – pro-growth and pro-electrification coalitions significantly overlap; social values, culture and identity – to be modern is to be electrified; and community life – our connection to one another (in industrial countries especially is often electrical (telephone, television, e-mail). It is not surprising, therefore, that electricity supply is often viewed as an essential public good in contemporary society.

**Parameswaran (1990)** says that even during the energy deficiency till 1983, the state of Kerala was capable to export electricity to other states. For two decades from 1962 only profit making had been the prime motto through abundant hydro-power/export of energy for the Kerala State Electricity Board. This deterred
the board from thinking about thermal power. Today the state depends entirely on the hydro-system for its electricity needs. However, realistic hydro-energy estimates fall short of the projected electricity demand.

**Yasushi Suzuki (2002)** made an attempt to throw light on indigenous structure as well as foreign aid policy towards India’s electricity power development in this light of the outputs of rent seeking process in India. It is concluded that Japan’s official development Assistance should be carefully monitored taking into consideration the impact output relationship in the unique rent seeking process in India which is characterized by the political power among the dominant proprietary classes, that prevents political week take payers who ought to criticize and oppose this inefficient structures, from organizing the political powers against the classes.

**Navroz K. Dubash (2003)** explained that in 1990s, conventional wisdom about the electricity sector was turned on its head. Previously, electricity had been considered a “natural monopoly,” and the electricity sector in most countries was either owned or strictly regulated by the government. Particularly in developing countries, government leadership in the development and use of electricity was part of a broader “social compact”. Also analysed
imperative is to embed public debate over electricity sector reforms in a system of sound governance, featuring transparent, open, participatory decision-making processes. Reforms that exclude voices that deserve to be heard have not proven to be sustainable-financially, socially, or environmentally. Reforms that are supported by a robust process of discussion and debate are much more likely to produce the social consensus needed to consolidate a better, more sustainable electricity future.

The study made by Carreon, et. al. (2006) found that electrification is most closely correlated with economic growth and urbanization. Their study further reveals that Residential and agricultural tariffs declined in the 1970s, which aided electrification, but progress in electrification has continued even through the flat and rising tariffs of the 1980s. Even as the sector has experienced enormous financial difficulties in the 1990s, electrification continued apace. By 1997, 94.7% of the Mexican population had access to electric power. Today, penetration has reached 96%, despite the country’s complicated geography and remoteness of small settlements in diverse rural areas.

UNEP (2005) explained that the dual challenge of ensuring electricity for national economic development and at the same time
provide increased electricity access to the poor parts of the population. The aim of the workshops was to stimulate new, cost-effective approaches to help create a sustainable energy future. Special focus was put on the role of energy in achieving the Millennium Development Goals (MDGs).

**Bishnu Dash (2010)** studied that The National Thermal Power Corporation (NTPC), the state owned power generator, has evinced interest to set up solar and wind projects in Orissa with aggregate generation capacity of 500 MW. NTPC aims to become accompany of 75,000 MW plus company by 2017. Since the public sector company plans to add 1000 MW through renewable energy sources, it is keen to develop some renewable energy based projects in the state. Orissa, which has untapped potential in wind and solar energy sectors at locations like Chanidpur, Gopalapu and Paradeep, is considered as an attractive investment destination. In the recent meeting with NTPC, it was decided that OREDA would select land for these projects either in the identified locations or any other potential locations, NTPC team would finalise the pre-feasibility study of wind and solar based projects at potential sites selected by OREDA.

**Abey George (2000)** has observed that the States have been looking for options to meet the demand for power from non-hydro
sources such as coal, diesel etc. The statistics indicate the growing shift towards non-hydro options. However, the search for non-hydro options is not going to be very smooth, on the following grounds. The coal bearing regions being situated far from the state, it may not be economically viable to operate coal-based systems. It is not easy to find out locations for coal based power stations anywhere near the sensitive coastline or with in the densely populated midlands. Per unit high cost of power production not the case of any option other them hydro including diesel and naphtha made it less attractive. However the state has decided to go in for non-hydro option. By 2002 AD, as much as 50% of the states electricity needs would be met from non-hydro sources. This is an outline of the pattern of electricity generation in Kerala, and the proposed plan for the future. It is at this present contest of deleting priority given to hydropower, that are needed to evaluate the history, potential and the future of SHP’s in Kerala.

Sylvie Choukroun (2002) reported that Maharashtra state government built a 2,015 megawatt power station. The Dabhol project, requiring $2.8 billion in capital investment represented the largest contract ever signed in India and the first foreign investment in its power sector. In the aftermath of India’s economic crisis of 1991, Enron was proposing to build a modern power plant that would satisfy
India’s electricity needs at a time when most foreign companies could not conceive of managing the risks of investing in India. According to one banker, “to think that Enron planned to raise, as it had originally contemplated, $1.75 billion in the debt markets at a time when international banks were making loans to India no longer than 365 days was nothing short of inspired lunacy. It was visionary.” Enron was rewriting the rules of power plant development for both the Indian government and the international investment community.

**Jaskiran Kaur Mathur, Dhiraj Mathur (2005)** have stated in their paper that state electricity boards are commercially unviable and is responsible for the financial mess that the state electricity boards are in. This paper examines rural electrification from a socio-developmental perspective and argues that the direct and indirect benefits of rural electrification in reducing the burden on women, its positive impact on health, education and farm income, justifies the expense of network expansion for universal access. It also advocates multiple uses of electricity as this would enhance these benefits have a beneficial effect on the environment, increase the viability of rural electrification and result in savings on household (total) energy expenditure.
Literature on problems and challenges of power sector in terms of generation, transmission, distribution, etc.

Anthonethe, Narasimha Murthy, Amuly, Reddy (1999) viewed that the Indian Power Sector was opened kept for private participation in 1991 to hasten the increase in generating capacity and to improve the system efficiency as well. Several plants are under construction. Till early 1999, generation had commenced at private plants totally less than 2,000 MW, in contrast some state undertaking had completed their projects even earlier than scheduled. The authors observed that Independent Power Producers (IPP) claim that their progress has been hindered by problems such as litigation financial arrangements, and obtaining clearness and fuel supply agreements. On other hand the state electricity boards have been burdened by Power Purchases Agreements (PPA) that favour the IPP’s with such a clauses as availability payment irrespective of plants utilization, tariffs reflecting, high capital costs and returns on equally etc. They also explained the process of inviting private participation in power sector the problems experienced and suggested on the restructuring of the power sector including the formation of Central and State Electricity Regulation Commission. But still, some important problems have not been addressed. Improving the generation capacity without corresponding improvement of the transmission and distribution facilities likely to further undermine system efficiency. They have also
opined that the most important investment in infrastructures has been the state’s responsibility because the intrinsically long gestation coupled with the relatively low rates from serving the needs of all categories of consumers have rendered such projects commercially under-editable.

Sudhir Kumar Kativar (2005)\textsuperscript{12} has expressed the view that a primarily agricultural electricity distribution subdivision in South Rajasthan reveals that distribution losses are not only very high, but they are mostly commercial in nature, illegal hooking in both the domestic and agriculture categories is rampant and probably constituents the largest proportion of unaccounted energy. The reasons for this can be traced back to factors linked to the performance of the utility and the wider socio-political environment. It will not be possible to bring about improvements in the current set-up through primarily technological measures, instead reform packages must adopt a framework for intervention that encompassed technical, commercial, social and institutional aspects of the problem.

Joel Ruet (2002)\textsuperscript{13} wrote that improvement in the Plant Load Factor (PLT) and reduction in the non-technical loss at least worth with present tariffs and increase 17 present energy level. There will enable us not to go in for unpopular measures such as tariff increase.
He also expressed that state electricity boards are operated based on self-enforcing political executive instructions, absence of focus on costs and budgets in actual decision-making, and absence of properly designed information systems.

**Government of India in its Tenth Five year Plan (2002-07)** focuses on the serious problems that the power sector has been suffering from, which were identified as early as ten years ago. However, no corrective action has been taken, and the result is that the power sector faces an imminent crisis in almost all States. No State Electricity Board (SEB) is recovering the full cost of power supplied as a result, they make continuous losses on their total operations.

**Madhav Godrole (2004)** has expressed that several state governments, including Maharashtra, have announced free power for farmers. In this rush towards competitive populism, the past experience of states that adopted the suicidal policy of giving free power for agriculture appears to have been lost sight of completely. Moreover, considering that subsidies for agricultural consumption largely benefit big farmers and other well-to-do people, the subsidization of these sections by common tax payers militates against all cannons of the welfare state.
Shahi (2005) analysed that the power sector poses a serious challenge to infrastructure development in India. A recent forecast made by the Planning Commission indicates that India requires an investment of US$ 300 billion for the development of power sector. In terms of per capita power consumption, India is well below China, the US, Russia, France, Germany, Japan and several other countries of the world. The inadequate generation of power and its supply has crippled industry, agriculture, trade, commercial, and domestic sector consumers. The exorbitantly high transmission and distribution losses have made power an expensive input and constrained India’s global competitiveness. Globalization, macro and micro economic reforms and outmoded framework governing functioning of power sector in India ushered in its privatization. This book also explained developed countries would also stand to gain from the debate by reflecting on the various models they have chosen to assist the developing countries in the growth of their power sector. On micro front, the book has successfully flagged issues of vital import to power sector ranging from debt-equity mix, escrow, and risk management to repatriation of dividends, technological up-gradation, reduction of technical losses and thefts.
David Newbery (2005) reveals that modern infrastructure, particularly electricity, is critical to economic development. Deficits cause shortages that constrain total output, magnifying the return to their elimination. South Asia, faced with inefficient and bankrupt state-owned vertically integrated electricity supply industries, was under strong pressure to reform. An imperfect diagnosis encouraged private investment in generation to address shortages, with IPPs selling power under long-term contracts to the largely unreformed state electricity boards (SEBs). Buying IPP power at prices above retail tariffs when the SEBs could not even cover the cost of under-priced electricity from state-owned generators exacerbated financial distress and was a recipe for conflict. Reforming the SEBs, though unbundling, full metering, effective accounting and management structures creating commercial discipline, under multi-annual regulation insulated from clientalist political pressures, is an essential first step.

Partha, Pratim, Mibca (1996) wrote in issues and challenges in Power Sector in India. They examined the various facilities and place them in perspective physical and financial achievements in the power sector and highlights the major issues which are presently engaging attention of policy makers in this sector. They also tried to
prioritize the challenges so that various impediments could be overcome as early as possible.

The Government of India reports in the Ninth Five Year Plan (1997-2002)\textsuperscript{19} that “the major cause of the problems being faced in the power sector is the arbitrary and unremunerative tariff structure”. The state governments not only desire to provide power at concessional rates to certain sectors, especially to agriculture without subsidizing SEBs for the issues arising out of it but also constantly interfere in tariff setting, even though the tariff is fixed and realized by SEBs.

According to India Infrastructure Report (2000)\textsuperscript{20} it is clearly understood that the root of chronic inability of SEBs to rise required investment is the uneconomic pricing of electricity. It is commented in the report that the absence of cost based economic principles in consumer category-wise tariff design, uneconomic level of cross subsidies, reliance on historical rather than marginal costs and inability to cover the costs incurred are the main weaknesses in the tariff policy.

Kannan N. Vijayamohan Pillai (2001)\textsuperscript{21} have written on plight of power sector in India. They have explained the significant aspects of inefficiency costs involved in SEB’s functioning. They are physical
performance and financial performance. The physical performance focuses on such aspects as technical efficiency T and D losses. Their possible under estimation as well as some aspects of institutional as organizational inefficiency. The financial performance focuses on performance of SEBs and the supply cost of electricity tariff and revenue.

**Literature on power sector reforms**

Madhav Godbole (1998) has viewed that only the privatization of distribution coupled with the setting up of effective regulatory bodies would provide a long term and lasting solution to the power sector imbroglio. Otherwise this type of twisting forward and backward and sideways will continue to create an illusion of forward movement only but not in reality.

Timma Reddy (2000) has opined that imposing the same set of reforms in several States is the cause for all its of the Power Sector. In other words a uniform system has been imposed on all states. There is no attempt to examine specific experiences of different states and tailor the changes needed according to the requirements of the particular states. The problems faced by the electricity establishment in Andhra Pradesh are not the same as that of Orissa. One can see that only the Electricity Reforms Act passed in AP is a carbon copy of
the Orissa Act, but also the regulations formulated by the APERC are only a copy of the OERC.

Rama Chandra (2000) while carrying out a study on Power Sector Reforms in Kerala, has expressed the view that Geographical social, economic qualified and cultural factors of a region have a bearing on its power consumption pattern. The case of Kerala with regard to reform in the power sector reflects the positive as well as relative expects characteristic of a society with rural production base and a carbonised culture. It is opined that the lesson to be learned, is that any reform would be welcomed only if it is preceded by open discussion and debates among the public. Any thing imposed from above will be opposed even if some of its implications might be beneficial to the public KSEB appears to be resorting to the new process of reform slowing but steadily. Enlisting consumers support for it people will co-operate if they are convinced that they will be benefited not just by promises and demagogy, the credibility of an institution, be it an, SEB or SERVC should be established beyond doubt, it propel are to accept a reform package. What is true of Kerala in this respect, can be true of other states as well.

Labour Department, Mantralaya, Mumbai (2002) explains that State has succeeded in achieving high levels of industrialization
and has been identified as the country’s industrial powerhouse. With less than 10 percent of population of the country, the State accounts for one-fourth of the gross value added by India’s industrial sector. Upto the 1990s, the State experienced a high growth rate. However, the State has seen a decline in growth rates in recent years. The average annual economic growth has declined sharply from 7.8% between 1985-86 and 1994-95 to 5.3% between 1995-96 to 1999-00. The process of reforms cannot achieve the desired results overnight, nor can change be brought about overnight. While it is proposed that the reforms will be initiated in the current financial year, it is expected that it would take 5 years to meet the objectives of the reform process. The success of the reform process depends on its acceptance by all stakeholders including consumers, employees and investors.

**Jenina Joy Chavez- Malaluna (2000)** expressed that the power industry is the most scrutinized industry in the world today. Sweeping reforms are being pushed in many countries even as California one of the earliest states to adopt similar reforms come under attack for its supposed failure to protect consumers and ensure stable power supply. Reforms of the power industry has increasingly been used as the basis for the release of funds by multilateral development banks and international financial institutions.
Raghu, et al., (2001) Power sector reforms are being taken up in the background of the liberalisation process that started in 1991 at the national level (when Congress party was in power) as a precondition to the IMF/WB bail out of India from the balance of payments (BOP) problem. Andhra Pradesh State Electricity Board (APSEB) was formed in the year 1959 and is responsible for all the three functions of the power sector, namely, generation, transmission and distribution of power. There are a number of rural electric cooperatives also functioning as supply licensees in the state. Besides generating power from its own power plants APSEB procures power from central sector generating stations, other states, joint venture power plants and more recently from the private sector. The power reform process, as is being done, has only managed to empower the anti-people processes, individuals and institutions, who have been responsible for the present crisis situation through finances, new concepts and approaches. The decision-making process has not changed, essentially it is the same which brought in the present crisis situation – opaque, no local participation, fudged information and statistics, adhoc planning, etc. The decision-making setting or environment has not changed, only the actors have changed. A true review of the reform process should go into the question of who is
getting the free lunch, supposed to have been provided to the poor people of India.

Sevorin Barenstein (2002) has felt that restructuring of electricity markets is a more difficult task than that of aimless, trucking natural gas and oil due to unusual combination of extreme electric supply and extreme in electric demand. Contracting can help to control the soaring whole sale prices and to solve some problems to create a stable, well functioning electricity market. He suggests that the difficulties with the outcomes so far from the experiments of California, New York, Pennsylvania, England and Norway should not be interpreted as a failure of restructuring but as a part of a launching process towards an electric power industry. That is still likely to serve customers better than the approaches of the part. He comments that other countries should be wise to learn from the experienced of these countries.

Srinivasan (2002) in his study has recommended that State Electricity Board should be reformed into bankable, commercially and professionally run corporate enterprise, free from political and bureaucratic interference. He has further opined that it is a better solution than to create conditions conductive for the private sector to take on the task of further expansion of capacity. He has stressed that
the provision of power for all can be achieved with the help of funds provided from within and from outside of India.

Rao (2003) expressed the views that the electricity Bill, 2001 was intended to enable a major restructuring of the electricity system in India. It would have been better if the Govt. had amended. The existing three Acts relating to electricity were enforced three years ago which introduced essential changes. The bill needs to be cleared speedily. This is despite its many short-comings which can be addressed, through later amendments after the bill is passed. The writer opines that the cost of supply model may become an important tool for tariff fixation and identification of subsidy/ cross subsidy. Section 61(d) of the E Act, 2003 depicts that the consumers should pay for the use of electricity in a reasonable manner based on average cost of supply. Section 61(g) of the E Act 2003, shows that the tariff progressively reflects the cost of supply of electricity and also reduces and eliminates cross subsidies within the period to be specified by the appropriate Commissions. Section 62(3) dictates that the Commission shall not show any undue preference to any consumer of electricity but may differentiate according to the consumer’s load factor, power factor, voltage, total consumption of electricity during any specified period or the time at which the supply is required or geographical
position of any area, the nature of supply and the purpose for which the supply is required.

Madhav Godbole (2003)\textsuperscript{31} opined that when the bill which was in due course enacted as the electricity Act, 2003, was under consideration of the standing committee of parliament. A number of issues which deserved closer examination had been highlighted. Several of their issues remained unattended. The Act, which is a halfway house, also raises a number of new issues which are likely to so serious problems in the coming years.

Ranganathan (2004)\textsuperscript{32} has stated that “The Electricity Act 2003 opens the door to immense possibilities in unleashing competition and trading, but at the same time opens a new area of policy risk, which it is supposed to mitigate. The act has an enabling framework to introduce competition in generation and privatization in distribution, but the homework in terms of addressing transition issue has been left undone”.

T.L.Sankar (2004)\textsuperscript{33} analysed that the Electricity Regulatory Commissions (ERCs) that have given tariff orders only two, namely Andhra Pradesh and Haryana, have adopted the concept of cost-to-serve whereas other ERCs, on the basis of same level data availability, have stated categorically that the data was inadequate to estimate the
cost-to-serve. So if one talks with reference to long-run marginal cost as base level cost then every consumer in most states would be considered as getting a subsidy. But if the average cost is taken as the base level, tariffs for agriculture and small households are below the base level and they would be called subsidised categories. Whereas if cost-to-serve is taken into consideration, agriculture may not be getting any subsidy at all in view of the supply being restricted to specific hours, including mostly non-peak hours of the day. If all factors are taken into costing the actual cost-to-serve, agricultural demand may be lower than the average cost. The outcomes of reform, if left to the action of natural political forces, will be complex and hard to predict. Thus, in states with strong labour unions, large, regulated private firms may be the likely outcome of reform rather than small, regulated private firms or co-operatives. In states with large, unserved rural areas, small co-operatives may result. Given the existence of economies of density and diseconomies of geography, policymakers should lend their own weight in support of multiple distribution structures.

**Bajaj (2004)** examined that power sector is an area where both the centre and the states have very vital interests, apart from its constitutional position of being a concurrent subject. The lead in this sector for change has come from the central government, and by and
large many of the central policies have been responsible for where the states are today. The author also analysed necessary for regulators to conduct a Regulatory Impact Analysis (RIA), because regulators can impose very large costs on the system, which perhaps are not justified by the benefits that they are intended to produce. An example may not be out of place in this connection. Karnataka has had for long, a severe shortage of power. Industries have been required to provide for captive generation capacity to cover a certain minimum percentage of their needs. Prior to the coming into force of the Reforms Act, the government had issued an order granting automatic permission to all industries to set up captive power plants. However, with the passing of the Reforms Act, the power to accord consent to the setting up of captive generating units, which was earlier with the Electricity Boards, has now been vested with the Commission. Though the shortage, reliability and quality problems of grid supply still continue, the regulator has set in position a formal approval procedure in respect of captive generation plants. Neither under law, nor in practice, does the regulator appear to have any justification for denying permission to set up a captive plant. The transaction costs that are incurred in this process do not seem to serve any purpose.
Literature on power sector after reforms

Pradip Baijal (1996)\(^{35}\) has stated that “several countries, both in the West and in the East, developed and underdeveloped, have introduced reforms in the power sector. In all cases, as the writer finds, the restructuring revolved around the economic and institutional organization of the sector and the advantages of introducing competition to raise the overall efficiency in the power sector in India. The reforms already initiated, at the federal level, are the enactment of laws set up regulatory commissions at the central and state levels; bifurcation of generation and transmission wings as district activities; recognize central and state transmission, utilities as government companies; allow setting up of private transmission lines within the overall supervision of operation of the government transmission utility; and provide for regulation of transmission by the central and state regulators.

Sebastian Morris (2000)\(^{36}\) has expressed the view that a “true reform and restructuring electricity board of any state in India would have to address the enormous leakage of revenue from the system. This would call for privatization of distribution, and change in the institutional mechanism for the administration of the subsidy as the author has opined. Rather than the detailed regulatory mechanisms,
which are being pushed by the central government and the regulators, light and price-cap type regulation would suit India better. A model plan for change is put forward for the Gujarat State Electricity Board, which is quite general and could easily apply to other SEBs. The author has suggested that complete separation of distribution from generation is neither necessary nor desirable, existing IPP contracts would have to be extinguished and methods to carry out the same. He is of the view that the danger of mounting regulatory risk, either shutting out private power production, or resulting in massive tariff increases are real.

**T.L. Sankar, Usha Ramachandra (2000)** wrote on Electricity Tariff Regulators. They examined the Orissa Electricity Regulatory Commission (OERC) and found that it seemed to take the world ‘regulator’ strictly literally and considered development of the power sector beyond its scope. They also explained the principles of retail tariff fixation and critically examined the performance of the Orissa Electricity Regulatory Commission (OERC).

**Rao (2000)** has carried out a study on Electricity Reform and Regulation. He has commented that Independent regulations are new in India. The writer further has expressed the view that public opinion has to recognize its value. It will do so when it sees results in terms of
improved quality, availability and in due course, reduced tariffs. Ultimately the independence of regulators can only be guaranteed by strong public opinion. While legislation is helping, it is important that financial and human resources for regulatory commissions are kept out of the scope of government approval.

Prayas Energy Group (2000) has found several reasons, developments of power sector in Maharashtra till now which are much different from many other reforming states. The PEG has opined that ruinous financial impacts as well as strong public opinion against the Enron project have forced MSEB/ GOM look for ways of avoiding this crushing liability. It has suggested that only legal and techno-economics innovations as well as strong political will would succeed in relieving people of Maharashtra and other states too from the unwarranted and high cost Enron Power. Further, the PEG has also found that the regulatory process in the states is also much different when compared to other states due to strong public intervention and sector of exigencies, the MERC has to handle several important cases such as amendments to PPA, subsidy by Govt., tariff revision and merit order dispatch. Finally, it is opined that the regulatory process in the states has resulted in the substantial improvement in the transparency and public participation, but at the same time, several further actions are needed to ensure that the process become
sustainable and effective in protecting and promoting “public interest” in the long term.

Sudha Mahalingam (2000)\textsuperscript{40} has carried out a study on the implementation of reforms in the Power Sector of Orissa. She expresses the view that the choice of Orissa for a pioneering electricity reform experiment seemed logical. Orissa, a state with low literacy rate low income levels and more importantly negligible agricultural consumption (less than) is lacking in a constituency which could effectively resist a drastic overhaul, nevertheless for the World Bank, which wrote the reform script. Hence the choice of Orissa came about more by accident than by design. Around the mid-90’s the Bank-funded Upper Indravati Project which has made the state run into rehabilitation problems. Unveiling to give up such a sizeable account the Bank hit upon the idea of converting the upper Indicative loan into reform loan and set aside 350 million Us dollars to be disbursed to the Orissa Electricity sector in phased manner linked to specific milestones in restructuring.

Surindar Kumar (2000)\textsuperscript{41} explained in his paper that the process of power sector reform was initiated in India in the early 1990’s. Haryana was the second state after Orissa to undertake power sector reforms under the overall supervision of the World Bank. The
Haryana Electricity Reforms Act 1997 came into force with effect from 14 August, 1998. Consequently a number of structural changes were undertaken. The writer examined the experience of electricity sector reform process in the contest of Haryana State and expressed his views in his paper on technical performance of the erstwhile HSEB was analysed from its formation in 1967 to 1998 when it was restricted under the reforms programme; the financial performance of the erstwhile HSEB; the salient features of the reform process; the functioning and order of the Haryana Regulatory Commission and the lessons drawn from the reform process.

Parikh and S. Parikh (2002) discussed the state of the power sector and experiences of power sector reforms in India. They also suggested some means to enable state Electricity Boards to control expenditure.

Stockholm (2003) analysed that key components of sustainable development in the energy sector have been promoted through public benefit programmes, albeit with mixed success. As reforms are introduced into power sectors around the world, some important public benefit programmes and social obligations are being questioned by those traditionally responsible for the design and implementation of these programmes. Power companies in
increasingly competitive markets find it hard to maintain spending on programmes that promote public benefits. There is mounting evidence from developing and developed countries alike that important public benefit programmes and other efforts fall through the cracks during reform. Programme areas that can promote public benefits include: Energy efficiency, Renewable energy, Public interest R&D, Access to modern energy services, Integrated resource planning, Environmental protection.

Raju and Rao (2004) have examined the impact of power sector reforms in AP. It is concluded that power sector reforms have positive impact on Transmission and distribution. They have also hold the view that the state sector generation had decreased during reform period.

Ranganathan and D. Narasimha Rao (2004) reveals that electricity reforms in India formally started along with economic liberalisation in 1991-92, though the impetus for private sector participation in the power sector predates this. Despite aggressive reform policies in the 90s, private sector participation was moderate at best, and the financial losses and cash flows of State Electricity Boards (SEBs) reached crisis proportions. The author also explains the current market rules to put in perspective the benefits of
competition. The current market is only a residual, unregulated bilateral market overlaid on a contractually bound, bulk regulated market. As such, the liquidity will remain low unless existing contracts are migrated to the market. Production efficiencies, through regional trade, are limited severely by the inflexible fuel markets. Open access will facilitate capacity expansion, mostly for sale to private distribution companies and industries, but the current rules do not contain sufficient measures to discipline costs thereof. An important benefit of trading, though, is to generate negawatts – avoided supply needs – through better utilisation of existing capacity.

Rajikumar (2005) has opined that during the past 14 years the ministry of power has produced several policy documents and has issued numerous amendments. But it has failed to make any significant improvements in the power sector. The new policy is another example that the ministry is not yet ready to learn from its own mistakes.

Sumir Lal (2005) has carried out a Case Study of the Power Sector in India. The study finds that the weakness of the Indian power reform programme has been that while it has focused on sorting out distortions in the relationship between the owner-government and power utilities through the unbundling and regulation model, it has
failed to carry credible assurances that this will improve the equation between the reformed utilities and their consumers.

The study made by David G. Victor (2005) examined the effects of Power Sector Reform on Energy Services for the Poor. It is found that no inherent connection between the promotion of improved welfare for the poorest households and the reforming of energy markets. It finds that while electricity and development are correlated, detailed studies have not clearly separated cause and effect. Insofar as policy makers invest in electrification programs for the purpose of promoting economic development, in fact there is not yet a robust theory and practice to identify when such strategies are a superior investment when compared with the alternative development strategies. The report also finds that, in practice, very few countries have actually implemented substantial reforms of their power sectors. Rather than the “textbook” model of reform, they have implemented a variety of half measures that have left SOEs in dominant roles with private firms operating at the margins. These “reforms” have not much altered the industrial organization of the electric power sector. Given these two weak signals—the ambiguous link between overt electrification and development, and the lack of much real reform in developing country power markets—it is not surprising that the
reform processes observed so far have not had much effect on the welfare of the poorest households.

Bikash Chandra Dash and Sangita (2011)\textsuperscript{49} examined the impact of governance reforms on efficiency, equity and service delivery in order to identifying the factors responsible for the success/failure of reforms in the power sector in Orissa. It is found from their study that the success of reforms depends not on mere change of ownership from public to private. It depends on so many factors like to what extent the stakeholders involved in the process are benefited and how the institutions implement the policies in reality.

CONCLUSION:

This chapter has exhibited the studies conducted and review of literature available on the subject of research. Literature on development and evolution of the power sector, literature on problems and challenges of power sector in terms of generation, transmission, distribution, etc., literature on power sector reforms and literature on power sector after reforms are presented in this Chapter. After this review of literature, it is synthesized that the power sector in India is facing severe problems. To solve these problems, the government of India as well as the state governments have introduced reforms. But these reforms are found to be failed to achieve the fruitful results on
the power sector. Though there are several studies conducted on the subject, most of the studies are conducted on the said aspects. There are very few studies that have been conducted on impact of power sector reforms. No study is made elucidating the causes for the power crisis from the micro-level. Thus there was a gap of the study on the subject. Therefore after finding the gap of research, the study has been undertaken on the above mentioned subject.

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