CHAPTER II

REVIEW OF LITERATURE

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II.1 INTRODUCTION

Review of literature is very important role for any research process. Review of Literature starts from the very beginning of the research process i. e. from the stage of selection of the research problem. The documentation and review of relevant literature continues till the research work is concluded in its final shape." " A researcher is expected to consult the relevant literature using various sources in order to identify the gaps in the available stream of the subject area. The gaps existing in the contemporary literature are major determinants of the scope of a proposed study. The proposed study is expected to bridge some of the theoretical as well as methodological gaps in the existing literature as far as possible.

II.2 WHAT IS REVIEW OF LITERATURE

Review of relevant literatures comprising of books , journals, periodicals and published documents pertaining to functioning ,performance and regulation of power sector in India. While a few of them are focusing on theoretical frame work a good many are related to the practical applications of concepts. Literature is a collection of all the scholarly writing on the topics. Literature is about telling a story kind of chains story where each writer starts with a partial story created previously by others and expands on it the existing literature is the story so far.

II.3 SOURCES OF LITERATURE

There are two type of sources of literature .

(1) Primary Sources. Information available or collected from original records is known as a primary sources of literature e.g Original research Articles.

(2) Secondary Sources Information available or collected from other reliable records is known as a secondary sources of literature e.g News papers, Books and magazines, Television radio website Wikipedia etc.

II.4 TYPES OF LITERATURE

(1) Course of assignment
(2) Research Proposal
(3) Research Papers

(4) Review articles

(5) Dissertation / thesis.

II.5 WHY REQUIRED LITEATURE REVIEW ?

1. Literature review required basically to find out how much previous research done so far.
2. After the study of previous study researcher can find out the "gap" and how further study will help to fills the "gap".
3. The necessity and rational of the study of research problems/gaps etc.
4. To determine the boundaries of research study.
5. Synthesizing and gaining a new perspective =Identifying relationship between ideas and Practise
6. Identifying relationship between ideas and Practise.
7. Establishing the context of the topics.
8. Enhancing and acquiring the subject knowledge and vocabulary relating ides and theory to application and main methodologies and research techniques.

II.6 OBJECTIVE OF LITERAURE REVIEW

Enhancement of knowledge about the thesis of literature and lets gain and demonstrate skills in two easy way viz;

(1) **INFORMATION SEEKING**:

The ability to scan the literature efficiently using manual or computerized methods to identify a set of useful articles and books.

(2) **CRITICAL APPRAISAL** :

The ability to apply principles of analysis to identify unbiased and valid studies.

II.7 PLANNING FOR LITERAURE REVIEW

- Define the topics:
- First to determine the scope and time required for the research.
- To expected outcome of research.
- What do you want to get out of search
- How to Management.
- How are you going to manage the search results.
- Plan sources to be searched

- The list and sequence of sources to be search.

Power sector has been a subject of serious discussion and debate both in academia and policy-making process. power sector has been undergoing radical structural and policy changes for the last three decades all over the world. As a result, there has been lot of formal discussion and scholarly research on the various aspects of reform and performance of power sector across the globe. Though there are a large number of studies available to review the power sector reforms across various countries, it is useful to make references of some studies which are highly relevant to the study area. A brief review of some of the relevant studies focusing on Financial Performance is under taken in this Chapter .

II.8 Various Literature Reviewed

The literature available related to the present research work studied by the researcher is divided into following categories namely

A	**Studies related to Technical and Financial Performance**
B	**Literature on development and evolution of the power sector.**
C	**Literature on problems and challenges of power sector in terms of generation, transmission, distribution etc.**
D	**Literature on power sector reforms.**
E	**Literature on power sector after reforms**
F	**Literature review on International level**

II.8. A Studies related to Technical and Financial Performance.

A.1 The CRISIL had conducted a study in the year 2010 to assess of the financial viability of the Power Distribution companies, sponsored by the Forum of Regulators (FOR). Financial viability of the electricity utilities was tested through this study for which sample of nine states, namely Andhra Pradesh, Punjab, Rajasthan, Delhi, Haryana etc. was considered . This study shows that main problem of power Distribution Company in Punjab was the deteriorating financial performance. Over a period of time, the Gaps between the revenue realised and cost of supply has increased resulting into the deteriorated financial viability. Which has a long-term financial implications. Because of high energy losses and poor financial performance, the Punjab State Electricity Regulatory Commission(PSERC) has disallowed some of the important expenditures to be incurred by Punjab state electricity board(PSEB). For example

in FY 2009-10 PSERC has disallowed Rs.1581 Crores. This Disallowance or reduction includes disallowance on account of transmission and distribution losses, employee cost and interest expenses. Finally, the study has suggested that the power utility of Punjab should improve its technical and financial performance. (CRISIL, 2010)

A.2 Another Group of Experts namely Indian Institute of Public Administration was formed in 2006 to conduct a study to examine the results of restructuring of State Electricity Boards. The objective behind this was to assess the outcomes of the restructuring process across various states so that lessons may be drawn for other states which were still undertaking there forms in the power sector. The study was based on the information gathered from various official reports such a Central Electricity Authority (CEA) publications, Planning Commission Reports etc. To measure the improvements in the operational performance by power sector restructuring, twelve state were selected. The output of this study are :

To turnaround of the sector, restructuring is necessary but not the pre requisite. It was highlighted that restructuring was only the beginning and not the end of the process. The restructuring process must be accompanied by continuous improvement in quality of service supplied to consumers.

Strong and sustained political support during the all phases of restructuring is very essential taking the employees into confidence and enlisting their willing support and strengthening the institution of Electricity Regulators are critical factors for success and sustainability of power sector reforms.

Most of the generation and transmission companies and some of the distribution utilities have now become financially viable. Consequently they are able to attract additional investments and better technological development.

It has been noticed and concluded that that most of the restructured utilities are becoming positive trends in respect of key parameters wherever atonable autonomy has been provided to them. The level of consumer satisfaction is more than as compared to the states who have not initiated the same process. Restructuring has brought the accountability in the power sector which triggers the improvement in performance. (Expert. Group, 2006)

A.3. Rao S.L (1996) has studied the performance of the SEBs in India to evaluate the technical as well as financial aspects of the power sector. The study highlights that in the

performance period, functioning performance of the power plants of SEBs was inefficient and not up to the mark. Some improvements were reported in the Plant Load Factor (PLF) after the introduction of medium size gas based power plants (200 MW to 500 MW). No remarkable progress in initiating the renovation and modernization programmes in the pre reforms period was observed. The study also highlighted some issues on the poor efficiency of the SEBs in supplying electricity. It revealed that poor commercial outlook was the main reason, which was responsible for deteriorating financial performance of the SEBs. (L, 1996)

A.4. Kumar, Surinder (1984) worked on pricing strategy in public utilities in the power sector. It found that the SEBVs did not enjoy any autonomy; its pricing policy was not based on any rational economic principles and driven by political intervention to some extent. The technical and financial performance of SEBs was very poor. The decision making process of SEBs, particularly the tariff setting process was manipulated by unwanted interferences on part of the respective State governments. SEBs were forced to provide electricity either free of cost or at the rates significantly lower than cost of supply to specific consumers categories without socio economic justification. Further, there was also huge cross subsidisation. Cross subsidisation means that some consumer categories such as domestic and agricultural were being charged at lower rates than the cost of electricity supply where others (industrial and commercial) were paying tariff higher than the cost of supply. The cross subsidisation from industrial and commercial sectors was used as a means to reduce the losses, incurred by SEBs. Further, the study has suggested that pricing policy should be based on sound economic principles. (Surinder, 1984)

A.5. Government of India (1980) constituted an Expert Committee to make a comprehensive study to inspect financial performance of the SEBs in the pre reform period to identify weaknesses in the system and recommend some suitable means us to strengthen financial health of SEBs. The study used information on average tariff, cost of supply and electricity subsidy paid by respective state governments as indicato (An Expert Committee, 1980)rs of financial performance. The Expert Committee concluded that on an average the revenue realised was not adequate to cover the cost of supplying power to various consumer categories. The study further suggested that the tariff applicable to various consumer categories should be adequate to make the SEBs financial feasible. Respective state governments should pay adequate amount of subsidies to compensate for the financial losses to distribution utilities on account of subsidized power supply to agricultural sector. (Committee, 1980)

A.6. Commercial aspects of the SEBs in India has been studied by Rao M Govinda in 1998. This study reviewed the existing pricing policy and its impacts on the SEB's financial position. In the study, the data was analysed calculating various parameters such as average cost of supply and average revenue realised from various consumers' categories. It concluded that here was no incentive to SEBs to improve the technical and financial performance due to the lack of operational efficiencies and organizational problems. It further conclude that there were many evidences when political considerations played significant role in day to day administration as well as making decision on fixing prices in the electricity sector. The electricity tariff for some customer categories was too little to cover up the cost of power. Resulting adversely affected the financial health of most of the SEBs in the country. This way the ability of SEBs, to generate additional revenue from industrial user decreased significantly. Thus the policy of cross subsidisation has resulted into heavy losses to the SEBs. (Govinda, 1998)

A.7. A review of the pricing policies followed by various electricity regulatory commissions in India has been made by Ahluwalia S S. in the year 2000. He observed that most of the regulatory commissions had adopted the cost of service methodology for the purpose of formative electricity tariff for end consumers, which is not an appropriate method in the Indian framework. As most of the power supply to agriculture sector was unmetered, it was not possible to estimate the actual cost of electricity supply. Moreover, under the cost of method, the organisations have a tendency to overestimate the cost of service. So this method would not be appropriate for India in the process of tariff determination. He has recommended the performance based rate making is the better method to promote economic efficiency in the power sector. Under this method, the price and level economic efficiency achieved by the regulated utilities is linked. Some incentive is given to the utility for improved performance. Henceforth this method is considered as superior method of tariff regulation. (S, 2000)

A.8. Gellerson (1980) made an attempt for the evaluation of marginal cost pricing for electricity utilities in India. Analysis was made using average incremental cost method. After estimating marginal cost prices, it compared them with the prevailing electricity tariffs. The study suggested that that the marginal cost approach of pricing is more suitable technique in ensuring price stability's. It is ensured that the generation capacity is fully utilised under this method. It further concluded that due technologies difference in plants, the marginal cost of

energy was higher in the northern as well as southern regions in relation to eastern as well as western regions.

The journey of fifty years (from 1948 to 1998) showed remarkable physical expansion in terms of installed capacity and network expansions until the initiation of power sector reforms. There are many official as well as independent studies shows that the physical growth of the power sector was considerably high. Per capita consumption of power in India increased from 50 kwh in 1947 to 500 units in 1998-99 and 779 in 2009-10. However, the operational and financial performance of most of the SEBs was not up to the mark. The transmission and distribution losses were reported at very high levels. Lack of organizational autonomy and commercial outlook in the operations of SEBs was the main reason for the poor operational performance Some studies have highlighted various problems faced by SEBs in relation to their financial performance and pricing policies. Some recent studies also examined the role of State Electricity Regulatory Commissions (SERCs) in improving the financial performance of the respective electricity distribution companies. (Gellerson, 1980)

II.8.B Literature on development and evolution of the power sector.

B.1. It has been reported by Sylvie Choukkroun (2002) that Maharashtra State government built a 2015 megawatt power station. The Dabhol project, is the largest contract ever signed in India requiring 2.8 billion in capital investment and the first foreign investment in its power sector. As result 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 envisage 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 insanity. It was visionary. Enron was rewriting the rules of power plant development for both the Indian government and the international investment community. (Choukkroum, 2002)

II.8.C Literature on problems and challenges of power sector in terms of generation, transmission, distribution etc.

C.1. According to India Infrastructure Report (2003) it is clearly understood that uneconomic pricing of electricity is the root of constant inability of SEBs to raise required investment. It is commented in the report that main weaknesses in the tariff policy are - 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 in the. (India P. C., India Infrastructure Report, 2003)

II. 8 D. Literature on power sector reforms.

D. 1. Madhav Godbole (1998) has viewed that way to curb and long lasting solution to the power sector imbroglio is only the privatization of distribution coupled with the setting up of effective regulatory bodies. Otherwise this type of twisting forward and backward and sideways will continue to create a false impression of forward movement only but not in reality. (Godbole, 1998)

D.2. K.Raghu, et. At., (2001) When liberalisation process started way back in 1991 . Power sector reforms were being taken up in the background as a precondition to the IMF/WE bail knockout of India from the balance of payments (BOP) problem. Andhra Pradesh State Electricity Board (APSEB) was formed in the year 1959 and it was 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. APSEB has its own Power Plants and generates electricity but besides generating power from its own power plants APSEB also procures power from central sector generating stations, other states Power Plants, joint venture Power Plants and they have also started purchasing power from the private sector. The power reforms process as is being done, has only managed to empower the anti-people processes, individuals and institutions, who have been responsible for the persistent crisis situation through finances, new concepts and approaches. The decision-making process has not changed only the actors have changed; essentially it is the same which brought in the present crisis situation – opaque, no local participation, fudged information and statistics adhoc planning etc. A true review of the reform process should be questioned as who is getting the free lunch, which was supposed to have been provided to the poor people of India. (K. Raghu, 2001)

D.3 " Madhav Godbole (2003) is of opinion that when the bill which was in due course and enacted as the electricity Act, 2003, was under consideration against the standing committee of parliament. There were several issues which required a closer examination, had been highlighted and various other issues remained unattended. The Act, which is a halfway in the house, also raises a number of new issues which are likely to be serious problem in the coming years. " (Madhav Godbole., 2003)

D.4 " Ranganathan (2004) has stated that the Electricity Act 2003 can crates a opportunity in the forms of competition and trading, but at the same time it opens a new area of policy risk, which it is supposed to mitigate. The act has an enabling frame work to introduce competition in Generation and Privatization in distribution but the homework in terms of addressing transition issue has been left undone." (V.Rangnathan, 2004)

D.5. " T.L. Sankar (2004) has analysed that the Electricity Regulatory Commissions (ERCs) that have set two tariff orders namely Andhra Pradesh and Haryana who have adopted the concept of cost to serve while other ERCs with same level of data availability, have stated that the data was inadequate to estimate the cost to serve. So if we think the given situation for long run, the marginal cost as the base level cost, then every consumer will get the subsidy in most of the states, but if the average cost is taken as the base level than it would be called subsidised categories. So if cost to serve is taken into consideration, agricultural sector may not get any subsidy in respect to supply being restricted to specific hours, including the non peak hours of the day. Agricultural demand may be lower than the average cost if above factors are taken into consideration for calculating the actual cost to serve. The outcomes of reforms are difficult to judge if it is left to the action of natural political forces. The states with strong labour unions and largely regulated private firms are the possible outcome of reform compared to smaller, regulated private firms or cooperatives. The policy makers should emphasis on creating good and multiple distribution structure where there is an continuation of economies of density and diseconomies of geography." (T.L. Shankar, 2004 .)

D.6 " Bajaj (2004) examined that power sector is an area where roles of both the centre and the states are very vital and should be given a constitutional position and be treated as concurrent subject. The Central Government has taken a lead role in this sector for creating various policies and the changes are witnessed by the State Government. The author feels there is a necessity for a regulator to analysis and conduct a Regulatory Impact Analysis (RIA). The analysis result will show whether the benefit which are proposed are justified in respect to the cost incurred by the regulators. A relevant example in this context may not be out of place. Karnataka State for long had a severe shortage of power. Industries were supposed to provide some captive generation capacity to cover a certain minimum percentage of their needs. The Reforms Act, which came into force later, prior to that the government, had issued an order granting automatic permission to all industries for setting up captive power plants. However, with the years gone by, the power to accord consent for setting up of captive generating units,

which was earlier with the Electricity Board, has now been vested with the Commission. Though the shortage, reliability and quality problems related to Grid supply continues, the regulators has set up a formal approval procedure in respect of captive generation plants. Neither under law nor in practice does the regulator seem to have any justification for denying permission to set up a captive plant. The transaction costs that are incurred in this process do not serve any purpose. " (Bajaj, 2004)

II.8 E Literature on power sector after reforms

E.1. Sebastian Morris (2000) has expressed its view that a true reform and restructuring of electricity board of any state in India would have to address the predicament of enormous leakages of revenue from the system. This would call for privatization of distribution network and change in the institutional mechanism for the administration of the subsidy, as opined by the author. Further the author believes that light and price cap type regulation would suit India rather than the detailed regulatory mechanisms, which are being pushed by the central government and the regulators. A model plan for such change was 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 network from Generation is neither necessary nor desirable, existing IPP contracts would have to be extinguished and its methods to carry out the same. He predicts that with increasing in the nature of regulatory risk, either shutting out of private power production, or resulting in massive tariff increases are to be seen in near future. (Morris, 2000)

E.2. 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 to think rigorously and to consider the development of the power sector beyond its scope. They also explained the principles to retain the tariff fixation and critically examined the performance of the Orissa Electricity Regulatory Commission (OERC). (Shankar T.L.& Usha Ramachandre, 2000)

E.3 Rao (2000) has carried out a study on Electricity Reform and regulation. He has commented that Independent regulations are new in India. The Regulators has to consider the public opinion and has to recognize their values. The results can be seen only when there is improvement in quality, availability in due course and the most important reduction in tariff. Ultimately the independence of regulators can only be guaranteed by strong public opinion. It

is important to keep financial and human resources for regulatory commissions out of the scope of government approval. (S.L., 2000)

E.4 Prayas Energy Group (2000) has found several reasons for developments of power sector in Maharashtra up till now which are much different from 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. If you want to stand still against the likes of Enron Power case which were unwarranted and high cost project only legal and techno economics innovations as well as strong political will would succeed in relieving people of Maharashtra and other states too. When compared to other states the regulatory process of Maharashtra State is much different which is rather due to strong public intervention and sector of exigencies. In addition the MERC also has to handle several important cases such as amendments to PPA subsidy by Government, tariff revision and merit order dispatch. Lastly, it is of the opinion regarding the regulatory process in the states has resulted in the substantial improvements in the transparency and public participation. A range of actions are also needed to ensure that the process become sustainable and effective in protecting and promoting public interest in the long term. (Group, 2000)

E.5 Sudha Mahalingam (2000) has carried out a study on the implementation of reforms in the power sector of Orissa. She expresses her view on the choice of Orissa for pioneering the electricity reform and the try-out seemed logical. The state of Orissa with low literacy rate, low income levels and importantly agricultural consumption is very less which could affect very little resistance and drastic overhaul which allowed the World Bank to wrote its script. It was blessing in disguise and hence the choice of Orissa came about more by accident than by design. The Upper Indravati Project was funded by the Bank in mid 90s which created a hell out of rehabilitation problems in the state. The amount of loan was very huge which the bank was unveiling to give up. They came up with an idea to convert the loan as reform loan and kept aside 350 million USD which was disbursed to Orissa Electricity Sector in phased manner with mapping one to one milestone which the Orissa state achieved during restructuring. (Mahalingam., 2000)

E.6 . Surindar Kumar (2000) in his paper showed that the process of power sector reforms was initiated in India in the early 1990s. After the Electricity reforms in Orissa, Haryana was the second state to undertake power sector reforms which was supervised by the World Bank. The Haryana Electricity Reforms Act 1997 came into force with effect from 14 August 1998.

With the reforms undertaken a number of structural changes were undertaken. The writer examined the electricity sector reform process with respect to Haryana State and expressed his view in his paper on technical performance of the erstwhile HSEB which was analysed form 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. (Kumar, 2004)

E.7 Parikh and S Parikh (2002) also discussed regarding the various power sector reforms in India and shared their thoughts. They also suggested some means which enables the state Electricity Boards to control expenditure which is on higher side. (Parikh, 2002)

E.8.. Stockholm(2003) analysed that key components of sustainable development in the energy sector have been promoted through public oriented programmes, even though it has a mixed bag like success. Every reforms introduced is always questioned by the various stakeholders involved with power sectors around the world, some important public benefit programmes and social obligations are being questioned by those peoples who were responsible for the design and implementation of these programmes prior to the reform process. As Power Sector has become a competitive market the Power companies in increasingly competitive markets are finding difficult to maintain spending on programme that promotes public benefits and the evidence are rising day by day whether it is developed or developing countries. 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. (Rao, 2003)

E.9. Raju and Rao (2004) have examined the impact of power sector reforms in the State of Andhra Pradesh. They came to conclusion that the power sector reforms have positive impact on Transmission and Distribution network. They are of the opinion that the State owned Generation has decreased during reform period. (C.S.N. Raju & P.V. Rao (2004), 2004)

E.10. " Ranganathan and Narasimha Rao (2004) reveals that electricity reforms in India started along with economic liberalisation in 1991-92, though the movement for private sector participation in the power sector predates this. Despite aggressive reform policies in the 90s, private sector participation was moderate and the financial losses and cash flows of State Electricity Board reached at highest magnitude. The author explains the current market rules to put in the benefits of competition in perspective. The current market is only a residual,

unregulated bilateral market which is overlaid by a contractually bound, bulk regulated market. The liquidity will remain very low unless the current contracts are migrated to the market. Due to inflexible fuel market the production efficiencies, through regional trade are limited. 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 is the better utilisation of existing capacity. " (T N Thakur, 2004)

E.11.. R Rajikumar (2005 believes that even though during the past 14 years the ministry of power has produced several policy, documents and also 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. (Rajikumar, 2005))

E.12. Sumir lal (2005) has carried out a case study of the power sector in India. The study finds that the Indian power reform programme has been focussed 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 realistic assurances that this will improve the equation between the reformed utilities and their consumers. (Lal, 2005)

E.13. The study made by David G. Vicktgor (2005) examined the effects of power sector reforms on energy services for the poor. The study found that there is no any inbuilt connection between the promotion activities carried out to improve the welfare for the poorest households and the reforming of energy markets. While electricity and development are co related to each other, detailed studies have not clearly separated its cause and effect. As the policy makers invest huge in electrification programs for the purpose of promoting economic and sustainable development, in realty there is not yet any robust theory and practice which identifies that such a superior investment made are worth of it when compared to other development strategies. The report says that, in practice and in realty, very few countries have actually implemented substantial reforms of their power sectors. Besides the text book model of reforms, they have actually implemented a variety of measures that have left SOEs in dominant roles with private firms operating at the margins. Such measure gives two weak signals – the ambiguous link between unconcealed electrification land development and the lack of much real reform in developing country power markets – it is clear that whatever measures and reforms have taken but it has no much effect on the poor. (David G. Victor. United Nations. New York, 2005)

E.14. Bikash C. Dash and Sangita (2011) 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. The study reveals that success of reforms not merely depends on change of ownership from public to private, but rather 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. (Sangita., 2011)

II.8 F Literature review on International level

F.1 As usual , in Russia also affected with the existent inefficiencies will delay growth of country. and deterioration sector's effectiveness due to lack of available resources for necessary investments. If reforms are effectively executed there are views for effective and high-quality power supply.

The Federal Tariff and Antimonopoly Service of The Ministry of Energy is a regulatory authority responsible for the accountable for the overall regulation of the Russian electricity sector, the physical operation of the electric power system and markets .viz;

- The Market council is governed by a supervisory board that comprises representatives of market participants, the Russian Government and other market infrastructure bodies.
- Trading system administrator. This is a non-profit company established as a fully owned subsidiary of the market council. The trading system administrator administers the wholesale power and capacity market and facilitates the trade by bringing together sellers and buyers.
- Trading system administrator comprises Centre for financial settlements. The Centre acts as an intermediary for payments in the wholesale market.
- System operator. The system operator is established as an open joint-stock company to oversee the dispatch of electricity and the stable functioning of the unified electric system. The system operator is currently 100% state-owned.
- Federal grid company "Rossetti" provides operation, maintenance and development of electric networks. It supervises both the national transmission grid and inter- regional distribution networks. Currently the State owns more than 85% of the company's stock capital.

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F.2 China is second leading power generation and consumption of electricity in the world. The foremost power from state controlled. The achievement of reorganization the power industry is a revolutionary. There are three segment of electricity monitoring system.

Segment no .I Power sector was ruled by Government from 1949 to 1985. Power industry is state monopoly business.

Segment no .I I Governmental monitoring policies were announced to inspire new stakeholders in the power generation market, lay off the functioning monopoly. However, there were no changes in the old management system during 1985 to 1997.

Segment no .III. Real reform of power sector starts after 1998 to 2002. Release the roles and accountabilities of the government from those of marketable enterprises, and instituting market devices for the power industry in certain countryside and towns (1998–2002). The determination of these pilots was to seek practical solutions to end the vertically integrated monopoly of the power sector. under this stage reduced the methodical difficulties involved in the administration and commercial responsibilities in the Chinese power industry. The separation of power generating companies from the grid operators alleviated the vital complications distinctive of a vertically combined monopoly in China's business power sector.

In April, 2002, the State Council of PRC sanctioned the *Scheme of the Reform for Power Industry*. The reform was favorable to the enlargement of power industry, to the enhancement of dependability of power supply, to the boost of environment safety as well as meet the snowballing electricity demand required by the whole society. The reform procedure shall be expert in diverse periods firmly and aggressively under the overall design and enlarging arrangement by strengthened management.

(sources From the Energy Policy 34 (2006) 2455-2465, 3E(Energy, Environment& economy) research institute , Tsinghu Unversity PR China available online 21 july 2005.)

F.3 A study to assess the impacts of electricity reform on the productivity of the Australian electricity industry. Assessed impact are as under.

The **employment productivity** of the electricity industry at countrywide level has shown a substantial Enhancement as a result of industry restructuring and privatisation. The **investment yield**, overall, has shown substantial increases in terms of as measured in terms of System Capacity Factor,

System Load Factor, and Excess Capacity – three inter-related capital productivity indicators, while in terms of other indicators, no improvement is evident. The **energy adeptness** of thermal generation has shown some enhancement, since the introduction of reform. Overall, mean of thermal efficiency for the vertical combined electricity industries has improved since the introduction of restructuring.

The **fiscal yield** was measured in terms of average real cost of electricity, Tariff for the residential and other category. have also shown a significant decrease as a result of industry restructuring..

Average **real cost** has dropped significantly as a result of restructuring. The impact of reform on **clean-efficiency** of the industry has been petty.

(source **A** study By Reza Fathollahzadeh Aghdam from University of Technology Sydney Faculty of Engineering 2006 on to assess the impacts of electricity reform on the productivity of the Australian electricity industry .)