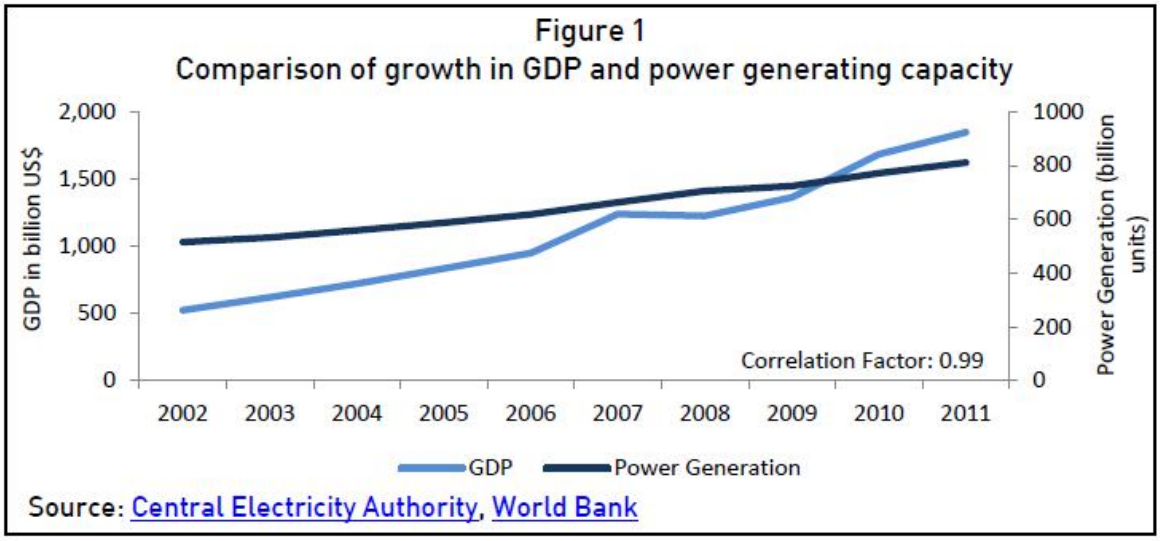
1. INTRODUCTION

1.1 Introduction of the project

In India, power is considered a core industry as it facilitates development across various sectors of the Indian economy.Sectors such as manufacturing, agriculture & commercial corporations and railways all depend on power sector.India's current generation capacity stands at 5th largest in the world at 192892 MW. Electricity demand in India is expected to increase with the growth.

GDP growth is strongly positively correlated to increase in power generation capacity. Fig 1.1.1.represents this correlation as seen over 10 years.

Figure 1.1Growth in GDP Vs power generation capacity



There was an addition of approximately 55,000 MW in the total capacity during the 11th Five Year plan. In that approximately 48 per cent and35 per cent was contributed by the central and state government respectively. Private Sector Power generation stood at 18 per cent in for 11th Five Year Plan.

Power is primarily generated from coal and Hydro-energy. Sources like Nuclear fuel and renewable sources are also used to generate electricity in India. Figure 2 displays power generation and consumption from different sectors in India.

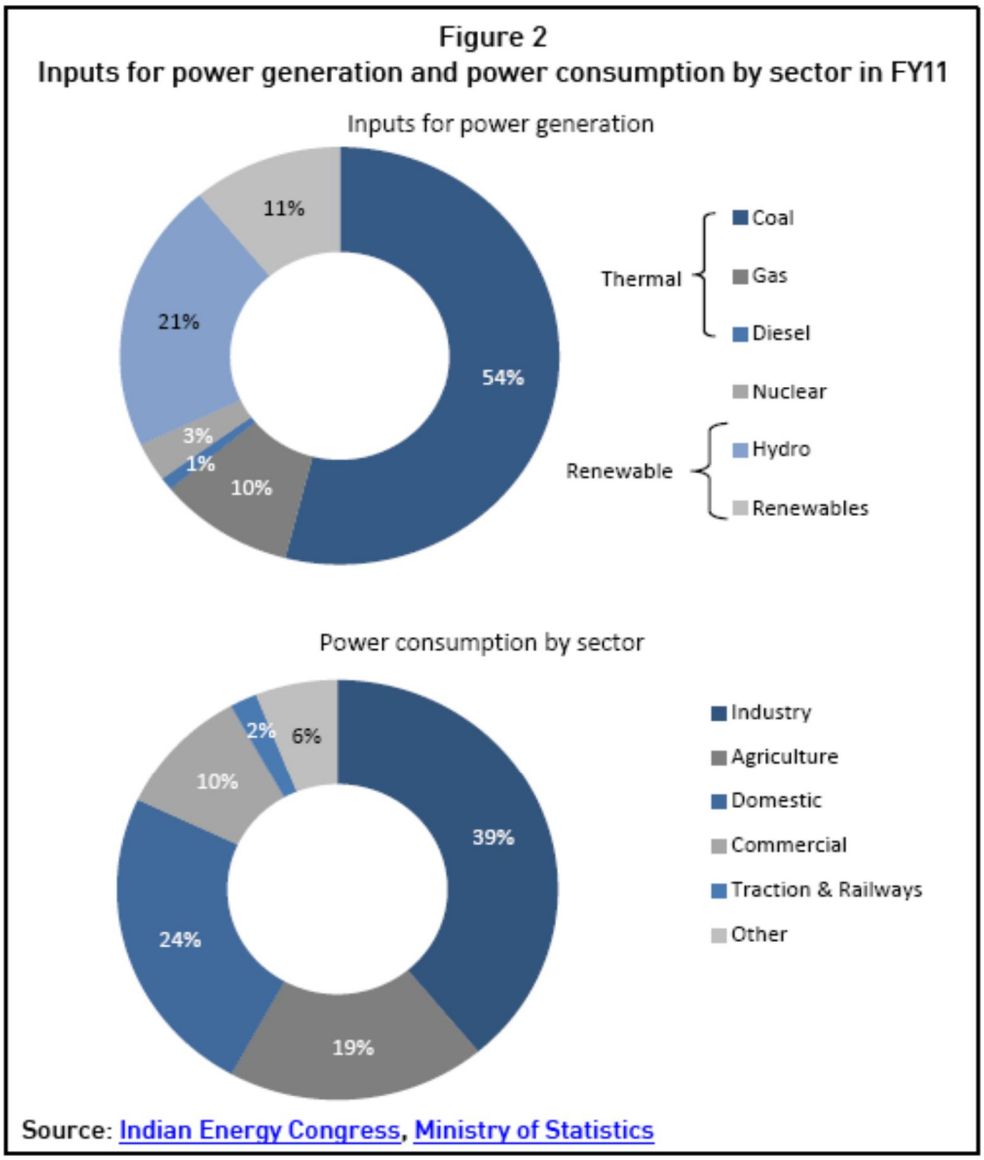


Figure 1.2 Power generations vs power consumption by different sector in FY 11

The government needs to work proactively in the direction to increase the generation capacity in a sustainable manner. A lot of work is needed in the area of shortage of supply and losses during distribution. A high growth rate needs to be attained during the 12th Five Year Plan.

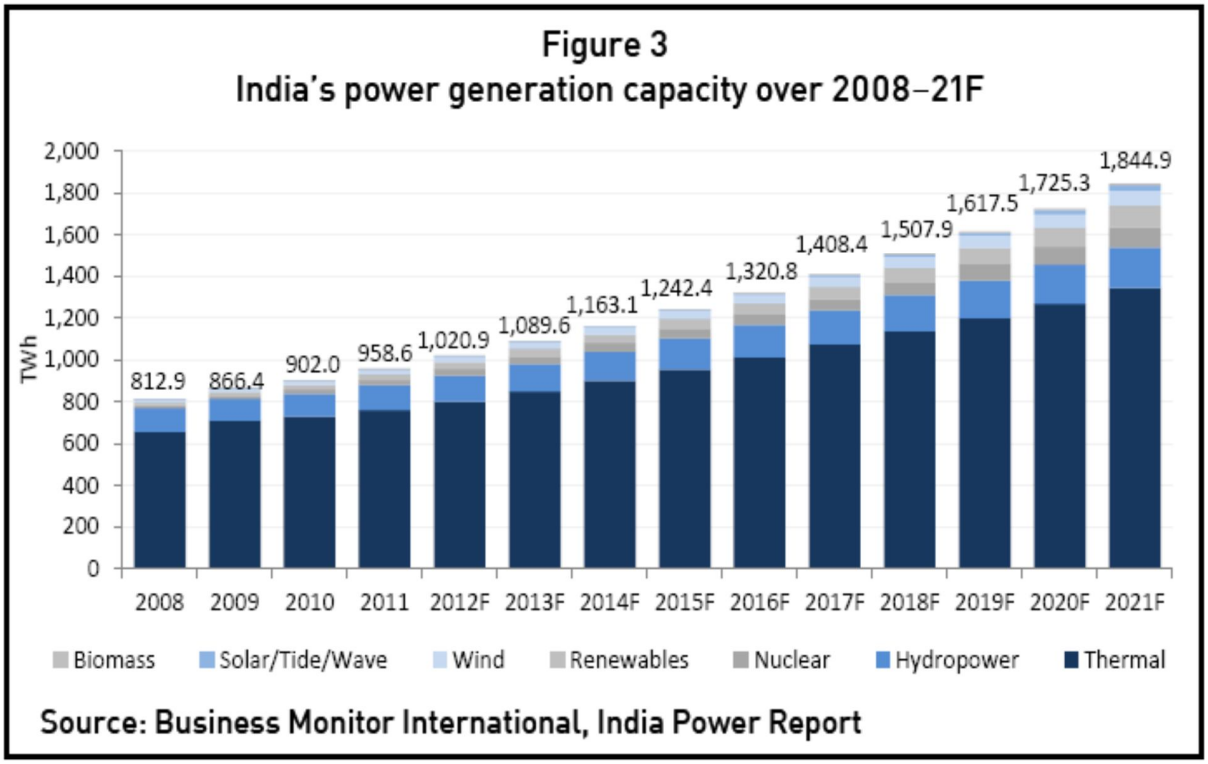


Figure 1.3 Generation Capacity of power sector over 2008-21F

There has been a lot of effort in the areas such as capitalizing on India's power generation capacity and also improvement in distribution. All these measures are required to meet the increasing demand of electricity in India.Measures such as including rural electrification programmes and mega power projects(UMPPs) are taken. FDI inflows are also expected to increase capacity addition significantly.

12th Five Year Plan Approach

A total investments of Rs 13,72,585 crore in dollor terms US$ 254.6bn is estimated by a Working committee, Power for the Indian power sector in this plan. The central government is planning on raising money using measures such as debt funds of infrastructure and credit schemes.There is also an expectation of incoming capital, needed to finance power projects, from public financial institutes, banks and infrastructure or powerful financial institutions, global investment fund, joint credit and equity markets.

Table 1.1: Power Sector proposed distribution funds during the 12th Plan

Table 2 Proposed distribution of funds during the 12th Plan (in Rs crore)				
Expenditure Area	**Centre**	**State**	**Private**	**Total**
Thermal	48,650	55,734	1,73,117	2,77,500
Hydro	35,183	8,042	6,952	50,159
Nuclear	26,200	-	-	26,600
Biomass	-	-	-	10,500
Small Hydro Projects	-	-	-	8,000
Solar	-	-	-	49,400
Wind	-	-	-	67,200
Captive Projects	-	-	65,000	65,000
Modernisation of Plants	19,847	12,040	-	31,887
Transmission	1,00,000	55,000	25,000	1,80,000
Distribution	48,191	2,38,082	19,963	3,06,235
Energy Efficiency	7,482	-	-	7,482
Human Resources	4,108	-	-	4,108
R&D	4,168	-	-	4,168
Advance for 13th Plan	1,65,372	15,417	91,793	2,72,582
Total Investment	Rs 13,72,580 crore (US$ 253.6 billion)			
Source: Planning Commission – Report of the Working Committee on power				

1.2 Objectives of the study

- To evaluate the Power sector Structure.
- To evaluate Power Sector companies issues.
- To evaluate the steps taken so far and the solutions for the issues.
- Valuation of stocks of power sector company TATA POWER using financial modeling technique.

2. LITERATURE REVIEW

IBEF: Power Sector: August 2014

Multiple drivers such as industrial expansion, increasing per-capita incomes are leading to growth in power demand, which is set to continue in the coming years. Country's power demand is expected to rise up to 1915 TWh by FY22.

Energy &Power is one of the key sectors attracting FDI inflows into India. Around FY06–14, the FDI inflows into the sector increased from a mere USD87 million in FY06 to USD1066 million in FY14. FDI limit of 100% in the power sector has boosted FDI inflows in this area. Demand for electricity is expected to increase at a CAGR of 9 per cent to 1915 TWh over FY07–22. As of now, current production levels are not enough to meet demand as annual demand outstrips supply by about 7.5 per cent.

The government is targeting capacity addition of around 89 GW under the 12th (2012–17) and around 100 GW under the 13th (2017–22) Five-Year Plan. Expected investments in the power sector during the 12th Plan, i.e., 2012–17 are USD223.9 billion.

There is a tangible shift in policy focus on the sources of power. State and Union governments are keen on the promotion of gas-based projects,hydel& renewable projects and as well as adoption of clean coal technologies.

Power Sector in India:KPMG Jan 2010: White paper on Implementation Challenges and Opportunities

It is evident that the deficit in power availability in India is a significant impediment to the smooth development of the economy. For this, bridging the gap in demand and supply has become critical and consequently large projects are being undertaken in different segments of the sector viz.Genco, Transco and Discom. As India has not witnessed such a large scale of implementation earlier, there is a need to review and enhance project execution capabilities to help ensure targets are met.

IBEF Oct 2013: POWER SECTOR IN INDIA - RENEWABLE ENERGY, SOLAR POWER, WIND ENERGY

Renewable energy is fast emerging as a major power source. Wind energy is the largest source of renewable energy in India; it accounts for an estimated 87 per cent of total installed capacity in renewable energy. India aims to increase the importance of wind power even further; there are plans to double wind power generation capacity to 20 GW by 2022.

Biomass is the second largest source of renewable energy accounting for 12 per cent of total installed capacity in renewable energy. Expect strong upside potential in biomass in the coming years.

Solar energy accounts for, one per cent of total renewable energy installed capacity. But, the share is not indicative of the country's true potential which stands at an estimated 5000 TWh per annum.

A study on Power Sector with role of NTPC Limited in India May 2013:Surenthiran N, DubeyPushkar,And Sharma Sudhir Kumar

Power sector in India is characterized by deficit. Therefore there exists huge challenge in front of power companies in production, regulation and integrating power system in the country. Thermal power production in India still exists to be highest contributor in power and energy. But with exhausting resources in the form of coal country must look forward for likely substitution in near future to come.

IBEF Jan 2013: The Indian Power Sector: Investments, Prospects &Growth

The power sector in India is currently in the developing stage and supports the growth of various sectors/areas, such as manufacturing,infrastructure,railways and commercial enterprises. As such, it is a key enabler for India's economic growth and has historically shown similar growth trends as compared to the economy.

Currently, the primary fuels used for power generation in India are coal and natural gas. Given the expected increase in future demand to 950000 MW by 2030, the government's focus has now shifted to capacity additions using cleaner fuels such as renewable and nuclear energy. Indian government has taken several initiatives, such as promoting the RPO scheme,100 per cent FDI through the automatic route, installing ultra-mega power projects and encouraging joint ventures through the PPP route to step up private sector participation. The private sector is expected to contribute nearly 60 per cent of the total capacity additions planned over 2012–17. The Government has also allowed foreign investments up to a limit of 49 per cent in power trading to aid the rapid development of the sector.

The industry sees tremendous scope of growth through programmes such as the Rural Electrification Program and the ultra-mega power projects. The Government's focus is now shifting towards the use of renewable energy sources and more efficient and environment friendly supercritical technologies for thermal generation to ensure sustainable development. The power sector's future focus is expected to be on hydro generation and the identification of close to 22000 MW of untapped hydro capacity.

3. METHODOLOGY

The study is done by analyzing a power company, Tata Power. Conglomerate Tata Group's has large exposure and investment in various sectors.

Projections based on Financial Modeling for valuations. Source of Data is company's Annual Reports.Projections are used to arrive at an intrinsic value for the stock using the NPV method.

3.1Need

Fundamental analysis predicts the future performance of the company. The Market price of a security tends to move towards its 'real value' or 'intrinsic value'. If the intrinsic value of a security is higher than the security's market value it signals a time to buy, on the other hand if the value of the security is lower than its market price it is a signal to sell the security.

3.2Data Collection

Sources of Data- Audited set of Primary data through Annual Reports and only verified Secondary Data.
e.g. NSE website, SEBI, RoC, Ministry of Power, CERC, CEA

3.3Tool Of Analysis

For interpreting financial statements financial ratios is the best tool to provide a basis for valuing securities.It helps in appraising financial and management performance. It allows a financial analyst to Standardize information from financial statements across multiple financial years to allow comparison of a firm's performance over time in financial models.It also helps to standardize the information from financial statements from different companies. It is done to allow apples to apples comparison between firms of differing size in a financial model.Establish and measure the relationship between inputs costs with outputs benefits.

It is good for long-term investments generally ranging from 7 to 8 years and more than that. This ability to identify and predict long-term demographic, economic, technological, and consumer trends isbeneficial for patient investors who pick the right companies or industries.Value Spotting Sound fundamental analysis will help identify companies that represent a good value. Most legendary investors think long-

term and value creation.The fundamental analysis can help uncover companies with a strong balance sheet, valuable assets and stable earnings.

Financial Modeling for Valuation and Projections.

4. Indian Power Sector

4.1 Electricity Sector in India

The sole responsibility of electricity supply in India is of the Government of India and the states. The main regulatory body is the Central Electricity Authority (CEA), which is under the control of the Union Government and generation companies at the centre, which are:

- NTPC - National Thermal Power Corporation
- NHPC - National Hydro-Power Corporation
- NPC - Nuclear Power Corporation

The power generated by these companies is sold to state-run utilities.

The generation and distribution of power in most of the country is done by the State Electricity Boards (SEBs).They have also given licenses to private power companies for the same purpose:

Tata has following companies Tata Hydro, Tata Power and Andhra Valley Power making their mark in power sector.

1. The suburban areas of Mumbai is covered by BSES,
2. The city of Kolkata is fed with electricity by CESC.
3. In Ahmadabad, Gujarat Ahmadabad Electricity Company is responsible for the generation and distribution of power.

The five players that are private generate a portion of power of the total power which is transmitted by them. They are referred to as licensees.

They have a monopoly over a predetermined area for the distribution rights. They are not suppose to distribute power beyond their specific regions without taking permission from the government. There can't be therefore any competition in an area of which a license is granted till the time it gets expired.

Structure - Central Level

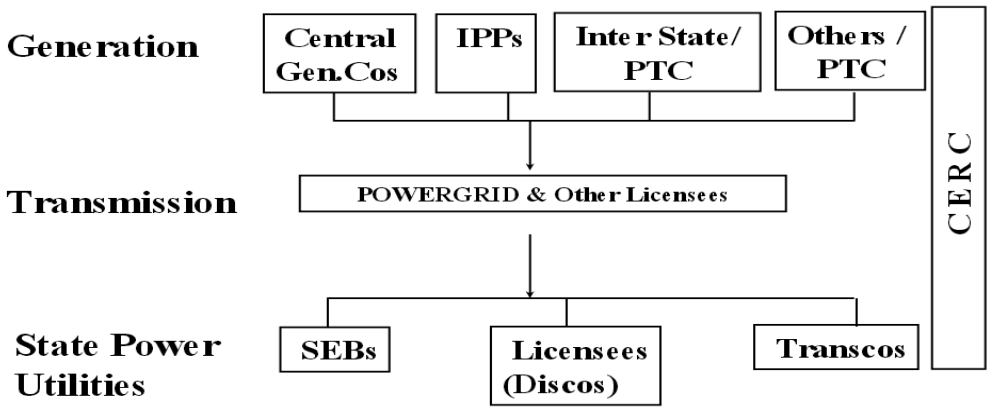


Figure 4.1 : Structure - Central Level

'Power' is considered as a concurrent subject and it follows a federal structure with RLDCs (Regional System Operator) giving direction to companies within the state to maintain the security of the grid and to theSLDCs (State-level System Operator) for supervising and controlling the power systems.

Hierarchy of Power Sector

First is the Central Government

In this 'Ministry of power' is a Public Sector Enterprise

- Generating Companies - NHPC, NPC, NTPC.
- Transmission Company-POWERGRID.
- Trading Company - PTC

Some Central Government Undertakings are DVC, BBMB and also educational institutions such as NPTI, CPRI etc.

Regulators are the Appellate Tribunal for Electricity and the Central Electricity Regulatory Commission(CERC) which are autonomous bodies.

Second is the State Electricity Board comes under the State Government

It has Minimum Generating Co, Transmission Co and Distribution Co.
The state government appoints the members of regulator at the state level which is the State Electricity Regulatory Commissions. It is also an autonomous body.

Independent Power Producers (IPPs) follows a Build-Own-Operate mode. Central governments do not have any IPP under its control.

CEA (Central Electricity Authority)

The function of CEA is to advise the ministry on technical, financial, and economic matters.

National Hydroelectric Power Corporation –NHPC-promotes and plans, integrated development of hydroelectric, tidal and wind power in India.

National Thermal Power Corporation -NTPC-operates and sets up thermal and gas-based power projects.

Rural Electrification Corporation –REC -provides financial assistance for rural electrification programs.

Power Finance Corporation- mobilizes capital from non-budgetary sources to provide term finance for power generation projects.

Power Grid Corporation of India Limited-is responsible for the operation of EVH network in the country. Formation of the National Power Grid, the central transmission utility, comes directly under the responsibility of PGCIL. PGCIL handles regional grid operations as well.

State Level- Structure

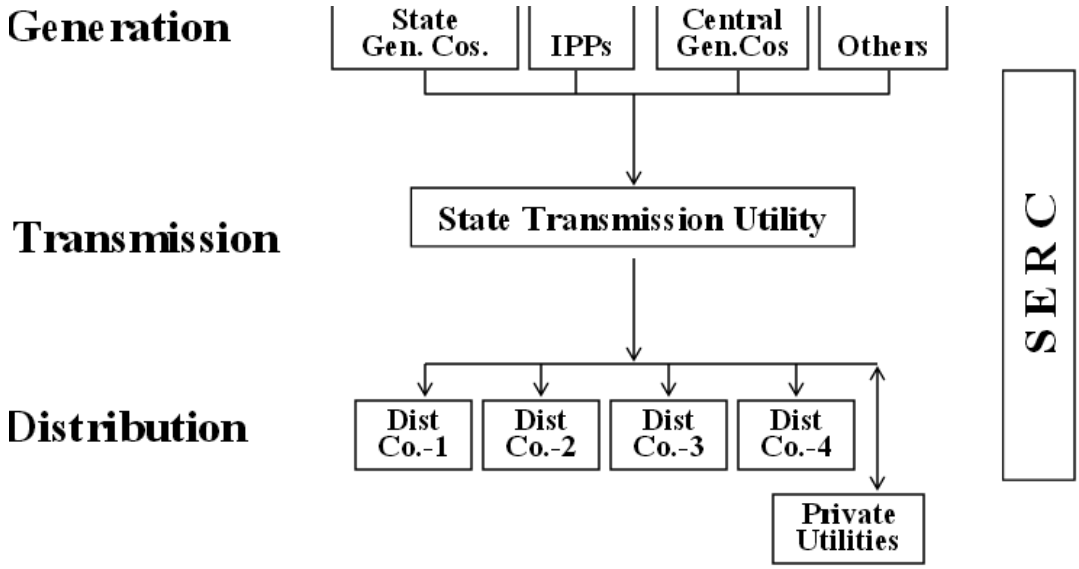


Figure 4.2: Structure - State Level

4.2 Issues Faced By Electricity Sector in India

Energy-starved population:

Average per capita energy consumption of India stands at 914 units per year vis. a vis. to China at ~4,000 and USA at~14,000. Due to enormous latent demand and nearly 30 crore people in India presently live without electricity, even after 67 years of independence. This is an abomination. The debilitating impact this has on families, especially on productivity, health care and education,

particularly for women and children, is profound. Lack of electricity access limits income-enhancing opportunities, which leads to a near-permanent improbability of beating the poverty trap.

The RGGVY (Rajiv Gandhi Grameen Vidyutikaran Yojana) recognizes a village as "electrified" if merely 10% homes and a few public buildings have wiring. Whether they are actually energized or are consuming is often not considered. The state of the rest of the homes in a village officially listed as "electrified" is not enviable.

Stranded power generation capacity:

Genesis of the problem was a 73% increase (14.7% CAGR) in coal-based power generation capacity in four years (FY10-14) versus a measly 6.1% (1.5% CAGR) increase in coal production, in the same period. Coal production remained sluggish because of complexities and arbitrariness brought in the environmental clearance.

Suboptimal utilization of our vast hydro potential:

Regional law & order issues often triggered by professional agitators, and long-standing inter-state disputes have constrained growth of hydro sector in India.

Tedious and almost indefinite delays for environmental clearances has added to the woes of the hydro power generators, and as a result, some critical projects are not being commissioned or are stranded. People, the ultimate beneficiaries of such power produced, continue their wait for reliable power.

Lack of focus on renewable energy sector:

Committed yet undisbursed subsidies worth Rs. 3,210 crores have severely dented the credibility of the renewable energy program. Many approved projects are stranded and not being implemented for non-availability of assured

funding. This has forced the Ministry of New & Renewable Energy to put all new sanctions on hold and potentially stop subsidies to two hitherto flagship schemes. Older subsidies were being disbursed.

Inter-regional transmission constraints:

Investments required in transmission simply did not keep pace with soaring demand and generation capacity. This led to transmission constraints restricting flow of power from surplus (e.g., those near pitheads such as Chhattisgarh and Jharkhand) to deficit states (e.g. Tamil Nadu)

Dismal distribution infrastructure:

Several hours of daily load-shedding and planned & unplanned outages have become the norm in large parts of the country. Annual operating losses of DisComs at ~Rs. 70,000 crore every year, with accumulated losses of Rs. 2,52,000 crores and total debt of Rs. 3,04,000 crores. This situation persists largely due to rampant and unbridled power theft.

Inter-ministerial turf-wars

One Ministry would propose, and another would dispose. Ministers and Ministries would be consistently at loggerheads with each other, and stories on inter- ministerial turf-wars were a matter of bureaucratic legend. Ministers would talk to each other on paper, and not in person, and queries would be raised sequentially and not all at once, thereby elongating the time taken to decide, often fairly routine matters. Applications would be pending for years, because of trivial queries being raised by one department or another, which would be vitiated the investment climate.

4.3Power Sector – Major Problems

Financial state of SEBs is deteriorating

- Only three SEB's with a ROR of 3% in 94-95.

Availability of inadequate power supply

- There is a requirement of 100,000 MW in coming 10 years
- An investment of Rs.4,00,000 crores is required for electricity generation projects alone. The same amount of investment is also required for transmission & distribution purpose.
- There is no permission to leverage funds from Capital Markets.

Fuel availability is an issue

- There is a current consumption of coal of about 215 million tonnes in power sector alone.
- There is a massive investment which is required in ports,mining, and railways for fuel transportation.
- Natural gas stations are utilized as the gas based stations are short of requirements.

Growing demand and supply gap

- There is an acute energy and peaking shortages of about 9% and 18% respectively.

System has operational and technical inefficiencies

- Thermal Plants have low PLF.
- T&D losses are huge.
- Under-utilization of existing capacities.

Hydro -Thermal mix is very low

- Inherent capability of quick start and stop operation in hydro thermal plants.
- Share of Hydro Plants in total installed capacity declined to 26%.
- The plants are increasingly used as base load stations.
- There is no full utilization of thermal power plant due to these factors.

(Sourceswww.indianpowersector.com| www.cea.nic.in| www.piyushgoyal.in)

4.4Prospective Solutions

Short Term and Long Term Measures

- Initiatives need to be taken by private sector in power sector for high investments
- Power sector requires a structural transformation.

Improving power system's operational performance

- Measures for short term
  - Time to time power system components maintenance
  - Renovating present units
  - Installation of capacitors in Transmission and Distribution networks.
- Medium-term and long-term solutions
  - Change in power generation proportion from sources/types mix change is required.
  - Improved Project Monitoring practices.
  - Regional surpluses should be optimized.
  - Energy conservation would require solutions.

Reduction in Transmission and Distribution Loss

- VIII Five Year Plan missed its targeted Transmission and Distribution loss reduction by 1 per cent per annum and stood at20.8 per cent in '94-95.

- 1 per cent reduction in Transmission and Distributionleads to savings of 800 MW.
- The following steps can be taken
  - There should be energy monitoring to identify areas with more than reasonable losses.
  - Improving the voltage by installation of capacitors.
  - Strengthen Transmission and Distribution systems by going for technology replacement and retiring age-old inefficient machinery.
  - Installation of meter boxes which cannot be easily tampered with needs to be installed to curtail energy theft.Vigilance squads can help in catching power thieves on the spot.

Gestation Period of Power Projects reduction

SEBs face time and cost overruns in project implementation because of poor cash flows and inadequate counterpart funds from States for externally assisted projects. The construction period from date of sanction or placement of order to commercial operation date is:

- 24 to 240 months – Hydro-Electric projects
- 37 to 206 months - Thermal projects
- 39 to 129 months - Central Sector thermal projects

Giving Priority to ongoing sanctioned projects

- In many in Central Govt. and State Govt. projects the slippages are caused by :
  - Firstly the paucity of funds.
  - There is also a delay in placement of order for main plant and equipment.
  - The late supply of equipment by suppliers.
  - The delays caused in land acquisition process.
  - The non-resolution of inter-state disputes.
  - Then there are problems due to disturbed site conditions at some projects.
  - There are also unresolved issues in fuel linkages.

- The contract failures leading to suspension of works and resettlement problems.
- There is also private participation policy led States to cut their own involvement in generation projects - State Sector inadequate funds.
- There is also a continuous investment made in these projects so that the investment which is already made is not lost.
- It is important to prioritize the investment before starting up new projects.

Shifting towards Liquid Fuel Based Plant

- Liquid fuels should be used to meet short term supply gap.
- Putting constraints on imports is also a problem.
- Substantial quantity will need to be imported if there is limited naphtha and furnace oil.

State Electricity Boards Performance

- Most of the SEBs are functioning unsatisfactory currently resulting in an increase in the amount of losses.
- Inefficient management practices.
- High inventories and huge investment cost is required.
- No relevant tariff structure.
- Heavy realization backlogs.
- Electricity duty collected but no subsidy being paid to rural boards for their development.
- Another area of lacking is the time and over run cost.
- Tariff for agriculture stands at about 30 % of total system.
- Power Sector reforms focusing on restructuring of SEBs are the key to be implanted.
- The State Electricity Boards are required to improve their financial health.
- More autonomy for SEBs is a must.
- To meet debt servicing and debt redemption obligations.

(Sourcewww.indianpowersector.com|www.cea.nic.in|www.piyushgoyal.in)

5. DATA ANALYSIS

5.1Valuation Of Tata Power

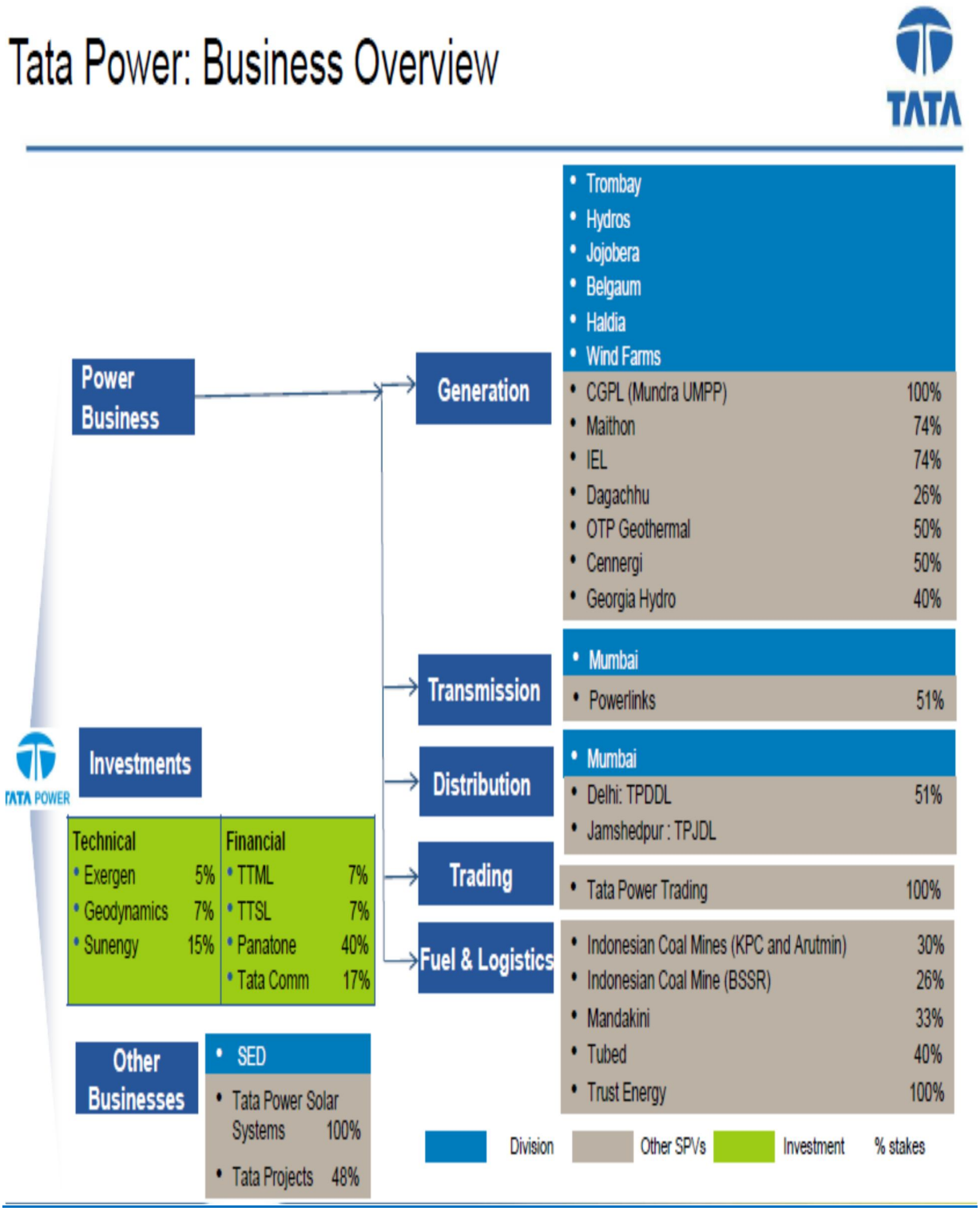
5.1.1 Tata Power Introduction

Tata Power's installed power generation capacity stands at 8521 MW. Itproduces power through various sources such as hydro, winds, thermal and solar.

Tata Power has a prominent presence in sourcing power from renewable sources. It is the pioneer for India'sMundhraUMPP project of 4000 MW, the first UMPP Project of India. It marks the technology advancement with adoption of super critical technology.

Ownership of coal mines in Indonesia with 30% stake and a geothermal project gives it an international edge with secured coal supply, having presence in sixteen South African countries.

It also has operations in Australia and Bhutan in terms of government and also private investments.



(Source: Tata Power website)

Figure 5.1: Tata Power Business Overview

Tata has been a leader in many areas.

- Pioneer in UMPP with adoption of supercritical technology.
- It developed the first 150MW and 500 MW thermal unit of India.
- 220 KV and 110 KVfirst Gas Insulated Switchgear.
- Grid Control fully computerized.
- Launched Distributed Digital Control with touch screen.
- First to implement energy monitoring Systems.
- Develop4-Circuit Towers220 kV Transmission Lines.
- First to develop the Flue Gas De-sulphurisation Plant that uses sea water.
- It was the first to develop a 275 meter tall chimney for 500 MW power plant.
- Introduced 150 MW Pumped Storage Unit.
- Launched Simulators for150 MW and 500 MW Thermal Power Plants.
- Introduce Fiber Optic Ground Wire Communication in India.
- Tata Power's Load Dispatch Center is the First ever in India to have recieved ISO Certification (11 August 2004).

Fuel Source	Location	State	Installed Capacity (MW)	Category Total (MW)
Thermal – Coal/ Oil/Gas	Trombay	Maharashtra	1,580	7,407
	Maithon	Jharkhand	1,050	
	Mundra	Gujarat	4,000	
	Jojobera	Jharkhand	428	
	IEL – Jojobera	Jharkhand	120	
	Rithala	New Delhi	108	
	Belgaum	Karnataka	81	
	Lodhivali	Maharashtra	40	
Thermal – Waste Heat Recovery	IEL – Jamshedpur	Jharkhand	120	240
	Haldia	West Bengal	120	
Hydro	Bhira	Maharashtra	300	447
	Khopoli	Maharashtra	72	
	Bhivpuri	Maharashtra	75	
Renewables	Wind farms	Maharashtra, Gujarat, Karnataka, Tamil Nadu, Rajasthan	461	490
	Solar Photovoltaic (PV)	Maharashtra, Gujarat and Delhi	29	
Total				**8,584**

(Source : Tata Power annual report FY 14)

Figure 5.2: Tata Power Installed Capacity

5.1.2 Projects under implementation:

There are many projects under implementation.

A hydro project of 236 MW will primarily feed the northern grid. It is the DugarHydro electric project in Himachal Pradesh. Further optimization to bring the capacity at 380 MW is under process.

There is also a plant of 1600 MW capacity at coastal Maharashtra. All the clearances are approved and land is also acquired. Agreement with the farmers is also approved in the Dehrand village.

For the 1980 MW Tiruldih Power Project in Jharkhand all the clearances and land acquisitions are complete.

The project of 660 MW in NarajMarthapur, Orissa is also under implementation. Coal Bloacks of Mandakini in the Angul district of Orissa are allocated. Other clearances and land acquisition is also complete.

A project is being executed by Industrial Energy Limited, which is a JV of it with Tata Steel Ltd. It is the Kalinganagar Project in Eastern region of Orissa with a capacity of 3X67.5 MV (Gas Based) and 3X150 MW (Coal and gas based).

Another joint venture project with Druk Green Power Company is the 126MW Dagachhu Hydro Project.

Tata Power has won the SorikMarapi geothermal project in Indonesia which has a capacity of 240 MW. It is currently under development.

The work to become a distribution franchise in the Jamshedpur circle of the Jharkhand Electricity Board (JSEB) also begun in 2013.

5.1.3 Leading Renewable player

Hydro Energy- With an installed capacity of around 447 MW in Maharashtra Tata power is in the making of the DurgaHydro Electric project of a capacity of 236 MW in Chenab Valley, Himachal Pradesh. In the field of Hydro Power it is also implementing the 126 MW Dagachhu Hydro Project.

Solar Energy – Tata Power has a strong portfolio of more than 28 MW of solar generation capacity. It started its solar project in Mithapur, Gujarat in Jan 2012 which had a capacity of 25 MW. It has also executed a 3 MW solar photo-voltaic plant at Mulshi in the State of Maharashtra. It started its first solar plant in 1996 at Walwhan in Lonavla.

5.1.4 Innovations of Tata Power:

Tata power has worked in various fields of innovation. They introduced India to **solar plant** which is floating.

Tata's wind energy capacity is 398 MW spreading across states namely Maharashtra, Gujarat, Karnataka, Tamil Nadu, and Rajasthan.

Tata Power's **geothermal power** generation project at SorikMarapi, Indonesia is in the exploration development phase.

There are also various plants that are set up in Haldia and Jamshedpur which uses waste gases from steel making process and help in reducing greenhouse gas emissions.

Figure 5.3: Tata Power National Footprint

TATA POWER's PERFORMANCE COMPARISON TO BSE POWER INDEX & BSE SENSEX

(Source: moneycontrol.com)

Figure 5.4: Sensex vs. Tata power

5.2 Finding and Recommendations

Research & Analysis

Profitability Analysis					
Particulars	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014**
Operating Profit Margin Ratio	19.40	19.51	18.84	23.61	-10.76
Net Profit Margin Ratio	-0.72	-0.25	-4.14	10.36	10.30

(Source: moneycontrol.com)

Table 5.1: TATA POWER Financials 1

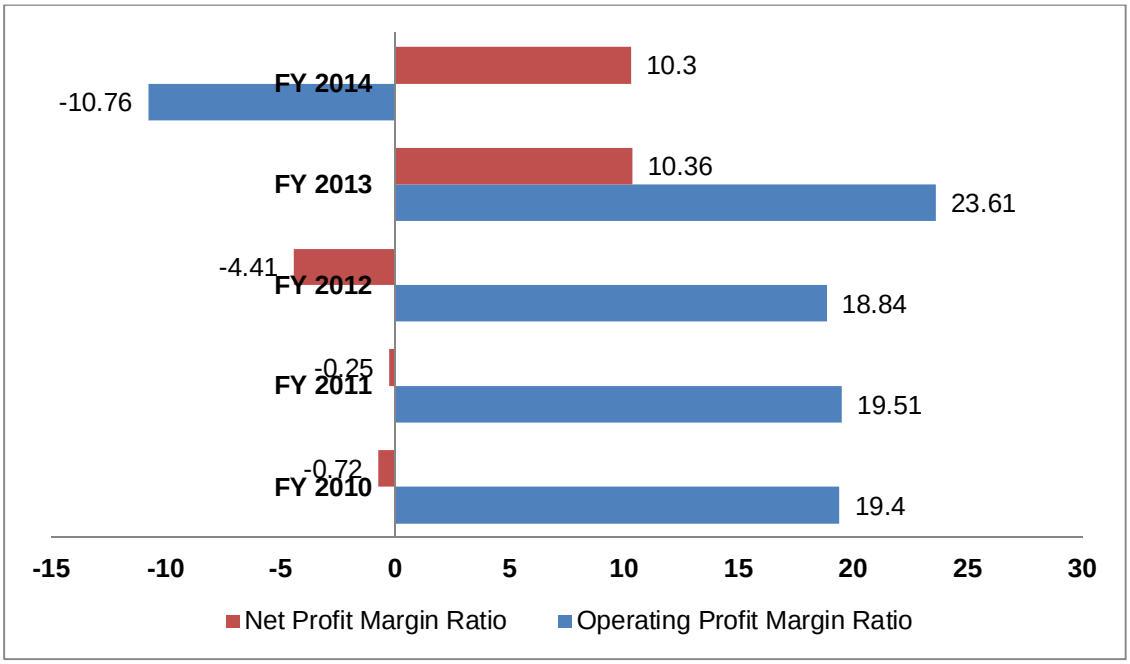


Figure 5.5: TATA Power Financials 1

The values deict that the net profit margin of the company has increased considerably since FY2010.

Efficiency Analysis					
Particulars	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014**
ROCE	8.99	9.72	8.31	10.69	13.49
ROE / RONW	2.09	-0.69	-8.58	14.69	19.25

(Source: moneycontrol.com)

Table 5.2: NTPC Financials 2

The Return on capital employed and the return on equity both have increased considerably since FY2010.

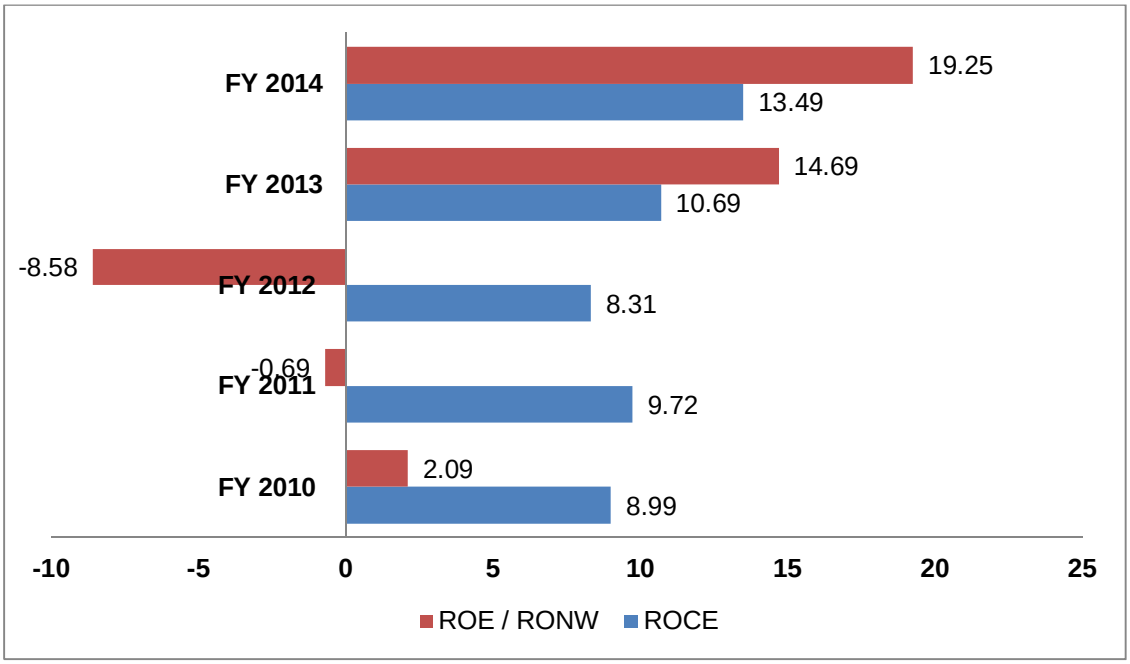
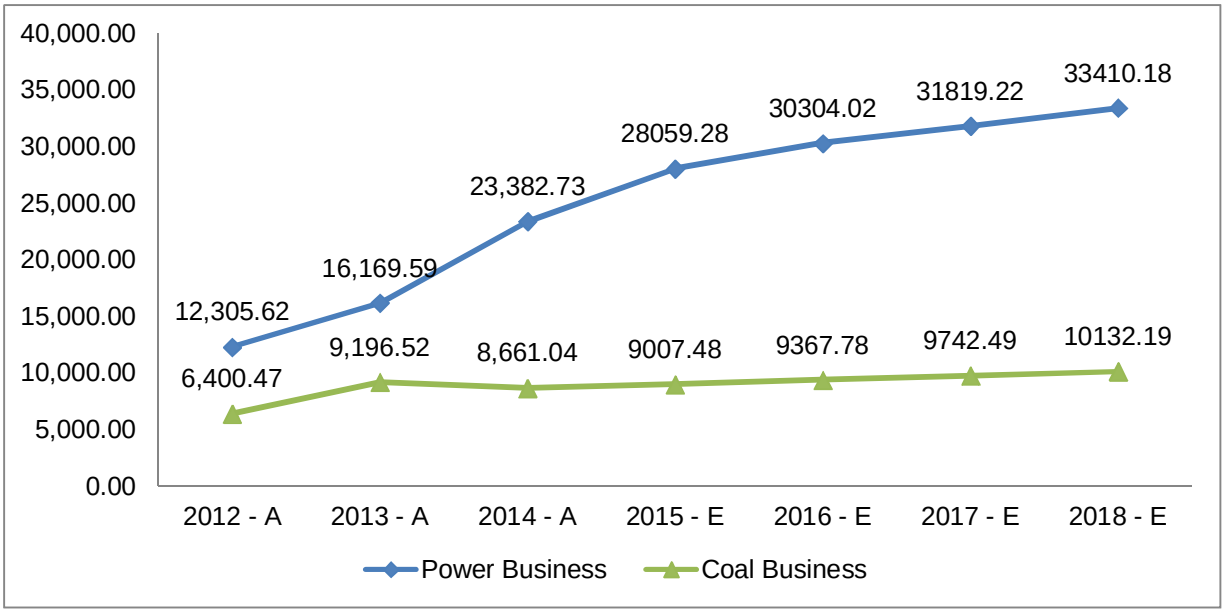


Figure 5.6: TATA Power Financials 2

Revenue Metrics



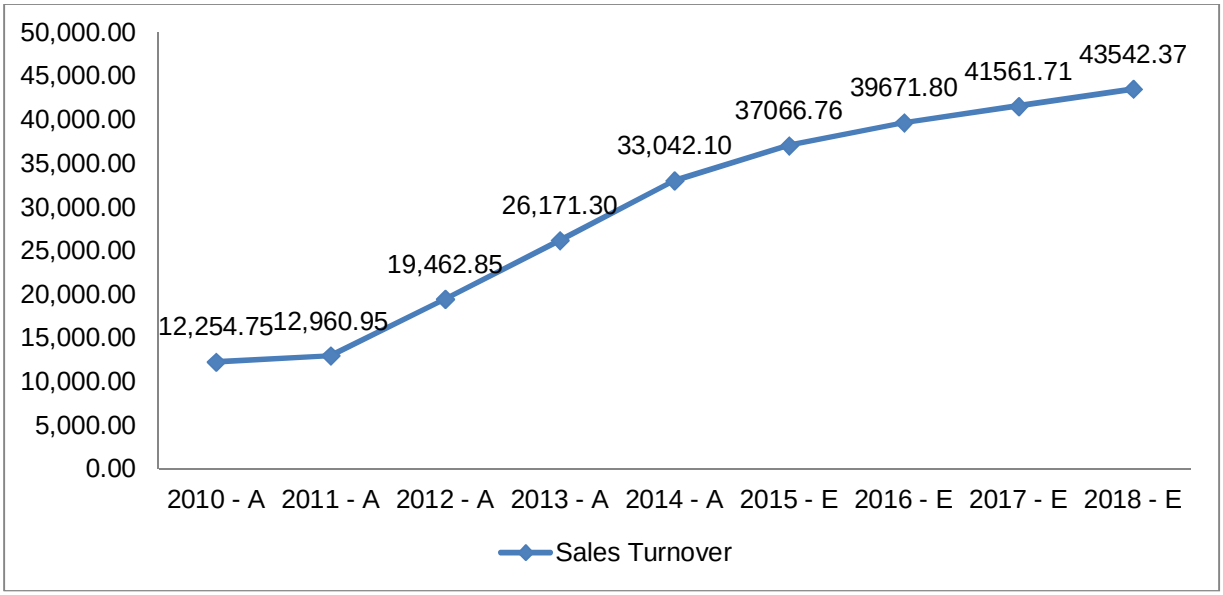
(Source: Annexure)

Figure 5.7: Tata Power Sales (Breakup) Projections

Power Business:A considerable amount of capacity is added in the generation capacity of Tata Power that can help it to achieve a growth of around 20per cent and 10 per cent in FY '15 and FY '16 respectively. Achieving Top Line growth of 5% is a very conservative and achievable target for Tata Power.

Coal Business: With the recent facts the government of India has decided that there will be a minimum allocation of coal to private sector power companies and hence there is a possibility that the growth will be slow in coal business.Therefore a conservative 5% growth in for the coal business is assumed.

The Sales break-up v/s Total revenues are shown above.

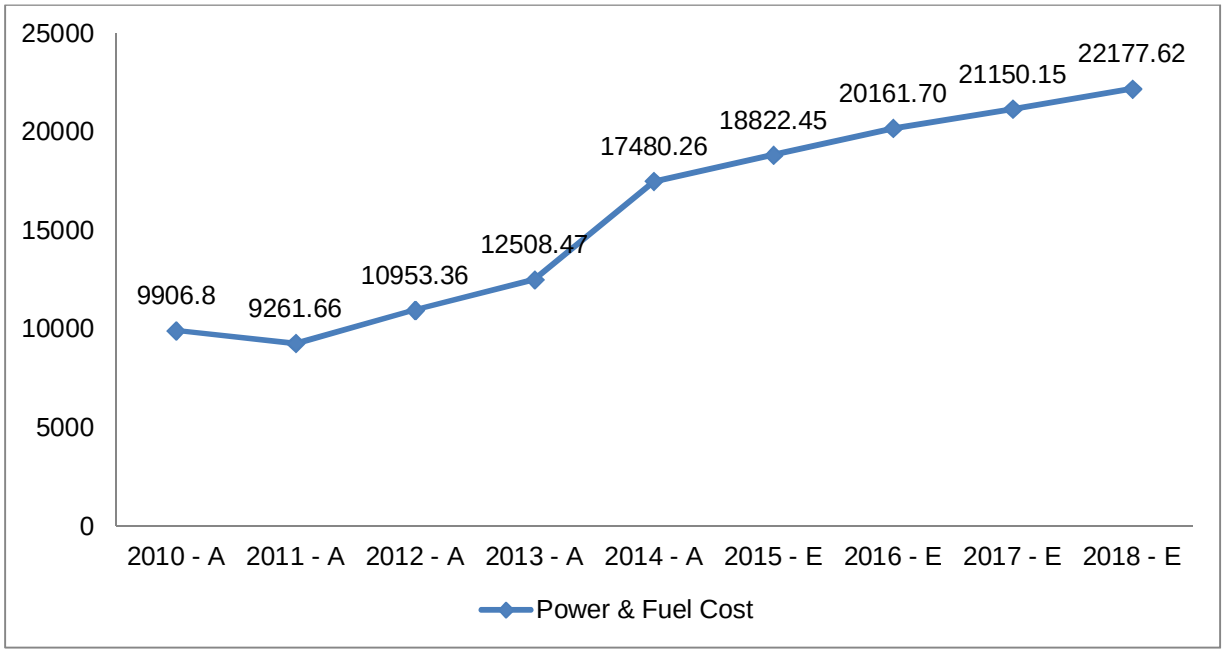


(Source: Annexure)

Figure 5.8: Tata Power-Sales Estimates

Cost-Metrics

For coal consumption, Tata Power has good no. of domestic sources. Self-dependence for coal availability in the worsened market situation will help in lowering the Fuel& Power as a percent of Sales.Assuming Power and Fuel cost at 50 percent of Sales.The graph below shows the projections.



(Source: Annexure)

Figure 5.9: Tata Power Power& Fuel Cost Estimates

Recommendation: As a result of the fundamental analysis of Power stock and future prospects of the company, the financial model gives the buy recommendation.According to the model at CMP-Rs. 78the stock can be bought as it is below its intrinsic value of Rs. 99.

5.3Limitations of Study

All effort has been to make this study line with the objective stated, but the limitation to study stand at

- The future predictions in financial modeling are done using assumptions, the actual values may vary in future with respect to changes in market conditions.
- The data are taken from sources such as annual reports and also websites like moneycontrol.com. The accuracy of data is subject to the accuracy of data available at the source.

5.4Conclusion

Availability of power is the basic and most important requirement for any country to grow at a faster rate.Therefore India has to make important industry friendly decisions and the necessary policy changes to set a new growth track for India's power industry.From the answers received from financial modeling and fundamental analysis, power sector has a great potential and most of the power stocks remainbelow their intrinsic value.Therefore from long term perspective the buy call on Tata Power stocks is recommended from the longer term perspective.

6. BIBLIOGRAPHY/REFERENCES

- IBEF: Power Sector : August 2014
- Power Sector in India : White paper on Implementation Challenges and Opportunities (KPMG : Jan 2010)
- IBEF: POWER SECTOR IN INDIA - RENEWABLE ENERGY, WIND ENERGY, SOLAR POWER (Oct 2013)
- A study on Power Sector with role of NTPC Limited in India:DubeyPushkar,Surenthiran N. And Sharma Sudhir Kumar (May 2013)
- IBEF: The Indian Power Sector: Investments, Growth & Prospects: - (Jan 2013)
- Source: Reuters. Tata power Stock Financials / Charts. Fromhttp://in.reuters.com/finance/stocks/overview?symbol=TTPW.NS
- Source: CNBC-TV 18. Power gencos seek relief on draft multi-year tariff norms. Retrieved January 17, 2014 from http://www.moneycontrol.com/news/cnbc-tv18-comments/power-gencos-seek-reliefdraft-multi-year-tariff-norms_1026803.html
- Source: CNBC-TV 18. Energy security is key if India is to become a superpower. Retrieved December 2013 from http://www.moneycontrol.com/gestepahead/article.php?id=1002268
- Source: India Brand Equity Foundation. The Indian Power Sector. Retrieved January 2013 from www.ibef.org/download/Power-Sector-040213.pdf
- Source: Tata Power. Power company in India. Annual Report. Retrieved December, 2014 from http://www.tatapower.com/investor-relations/anlreport-archive.aspx
- Indian Power Sector website http://indianpowersector.com/
- Central Electricity Authority http://www.cea.nic.in/welcome1.html

7. ANNEXURES

7.1P&L Screenshot

Tata Power Final 2.xlsx - Microsoft Excel

	A	B	C	D	E	F	G	H	I	J
1	**Tata Power**									
2	Consolidated P&L Statement of Tata Power (Amt in Cr.)									
3	(All data is Crore INR, except per share information)									
4	(Red for assumptions, Blue for actual data, Black for calculations)									
5	Date	March-10	March-11	March-12	March-13	March-14	March-15	March-16	March-17	March-18
6	Year	2010 - A	2011 - A	2012 - A	2013 - A	2014 - A	2015 - E	2016 - E	2017 - E	2018 - E
7										
8										
9	Income									
10	Sales Turnover	12,254.75	12,960.95	19,462.85	26,171.30	33,042.10	37066.76	39671.80	41561.71	43542.37
11	Excise Duty	6.52	10.95	12.09	18.41	16.67	0.00	0.00	0.00	0.00
12	Net Sales	12,248.23	12,950.00	19,450.76	26,152.89	33,025.43	37066.76	39671.80	41561.71	43542.37
13	Other Income	5,628.32	6,520.39	410.50	268.76	369.20	474.36	547.81	634.80	709.09
14	Stock Adjustments	79.76	-9.61	-3.34	177.01	275.12	103.79	103.79	103.79	103.79
15	**Total Income**	**17,956.31**	**19,460.78**	**19,857.92**	**26,598.66**	**33,669.75**	37644.90	40323.39	42300.30	44355.25
16										
17	Expenditure									
18	Raw Materials	213.15	204.73	516.01	749.83	386.74	432.40	463.17	485.87	509.48
19	Power & Fuel Cost	9,906.80	9,261.66	10,953.36	12,508.47	17,480.26	18822.45	20161.70	21150.15	22177.62
20	Employee Cost	525.23	707.41	825.93	1,146.26	1,322.95	1599.91	1713.74	1797.76	1885.10
21	Other Manufacturing Expenses	1,662.01	3,043.11	1,026.18	5,089.62	4,485.54	5015.12	5371.95	5635.32	5909.08
22	Selling and Admin Expenses	1,280.42	1,852.50	0.00	83.57	0	0.00	0.00	0.00	0.00
23	Miscellaneous Expenses	185.64	306.1	1,530.36	1,331.75	3,008.63	3363.84	3603.18	3779.83	3963.45
24	Preoperative Exp Capitalised	-166.2	-1,083.69	0.00	67.92	0	0.00	0.00	0.00	0.00
25	Total Expenses	13,607.05	14,291.82	14,851.84	20,977.42	26,297.38	29233.71	31313.74	32848.93	34444.73
26	**Operating Profit**	-1,279.06	-1,351.43	4,595.58	5,352.48	6,444.70	8411.19	9009.66	9451.37	9910.51
27	PBDIT	4,349.26	5,168.96	5,006.08	3,368.98	5,963.90	8411.19	9009.66	9451.37	9910.51

7.2 Balance Sheet Snapshot

Tata Power Final 2.xlsx - Microsoft Excel

	A	B	C	D	E	F	G	H	I	J
1	**Tata Power**									
2	Consolidated Balance Sheet of Tata Power (Amt in Cr.)									
3	(All data is Crore INR, except per share information)									
4	(Red for assumptions, Blue for actual data, Black for calculations)									
5	Date	March-10	March-11	March-12	March-13	March-14	March-15	March-16	March-17	March-18
6	Year	2010 - A	2011 - A	2012 - A	2013 - A	2014 - A	2015 - E	2016 - E	2017 - E	2018 - E
7										
8	Sources Of Funds									
9	Total Share Capital	221.40	237.43	237.29	237.29	237.29	237.29	237.29	237.29	237.29
10	Equity Share Capital	221.40	237.43	237.29	237.29	237.29	237.29	237.29	237.29	237.29
11	Share Application Money	0	0	0	0	0	0.00	0.00	0.00	0.00
12	Preference Share Capital	0	0	0	0	0	0.00	0.00	0.00	0.00
13	Init. Contribution Settler	0	0	0	0	0	0.00	0.00	0.00	0.00
14	Preference Share Application Money	0	0	0	0	0	0.00	0.00	0.00	0.00
15	Employee Stock Opiton	0	0	0	0	0	0.00	0.00	0.00	0.00
16	Reserves	7,848.40	9,976.03	13,889.28	13,937.09	11,647.94	12,252.63	13,517.26	15,289.28	17,843.87
17	Revaluation Reserves	0	0	0	0	0	0	0	0	0
18	**Networth**	**8,069.80**	**10,213.46**	**14,126.57**	**14,174.38**	**11,885.23**	12,489.92	13,754.55	15,526.57	18,081.16
19	Secured Loans	10,707.37	14,297.28	19,550.69	22,780.01	24,182.46	24182.46	23682.46	22732.46	21932.46
20	Unsecured Loans	3,242.25	4,056.13	5,211.71	9,139.84	12,914.62	12914.62	11914.62	9914.62	7914.62
21	**Total Debt**	**13,949.62**	**18,353.41**	**24,762.40**	**31,919.85**	**37,097.08**	37,097.08	35,597.08	32,647.08	29,847.08
22	Minority Interest	944.37	1,209.71	1,414.26	1,631.27	2,064.60	2,064.60	2,064.60	2,064.60	2,064.60
23	Policy Holders Funds	0	0	0	0	0	0.00	0.00	0.00	0.00
24	Group Share in Joint Venture	4,453.49	4,792.39	264.67	0	0	0.00	0.00	0.00	0.00
25	**Total Liabilities**	**27,417.28**	**34,568.97**	**40,567.90**	**47,725.50**	**51,046.91**	51,651.60	51,416.23	50,238.25	49,992.84
26										
27	Application Of Funds									

7.3 Cash Flow Snapshot

Tata Power Final 2.xlsx - Microsoft Excel

	A	B	C	D	E	F	G	H	I	J
1	**Tata Power**									
2	Cash-Flow Statement of Tata Power (Amt in Cr.)									
3	(All data is in Crore INR, except per share information)									
4	(Red for assumptions, Blue for actual data, **Black** for calculations)									
5	Date	March-10	March-11	March-12	March-13	March-14	March-15	March-16	March-17	March-18
6	Year	2010 - A	2011 - A	2012 - A	2013 - A	2014 - A	2015 - E	2016 - E	2017 - E	2018 - E
7										
8	**A. Cash flow from Operating Activities**									
9	Net Profit before Taxes	2463.83	2767.3	3156.88	507.25	1,276.68	2277.40	3032.01	3609.28	4464.47
10	Adjustments for:									
11	Depreciation/Amortisation	656.49	877.68	980.24	1,334.64	2,051.69	3,070.79	3,038.50	2,902.94	2,750.47
12	Impairment of Goodwill	280.37	15.28	0.82	0.00	-	-	-	-	-
13	Interest Expenditure	708.74	763.87	0	0	-	-	-	-	-
14	Finance Cost (Net of Capitalisation)	81.97	10.72	810.21	1,527.09	2,635.53	3,063.00	2,939.15	2,939.15	2,695.58
15	Interest Income (Net of Interest Income Capitalised)	-81.36	-87.59	55.94	-165.61	(245.71)	-	-	-	-
16	Dividend income (Net of Dividend Income Capitalised)	-7.68	-10.17	-109.94	-12.14	(11.93)	-	-	-	-
17	Provision for Doubtful Debts/Advances (Net)	-0.23	-50.04	-13.86	33.78	49.09	-	-	-	-
18	Provision for Contingencies (Net)	9.8	0	-10.57	0	1.43	-	-	-	-
19	Provision for diminution in value of investments (Net)	-0.78	0	80.74	19.92	68.56	-	-	-	-
20	Deferred Stripping Expenditure charged off	0	119.53	-362.84	659.44	-	-	-	-	-
21	Provision for future foreseeable losses etc.	-2.4	0.19	-3.43	0.34	-	-	-	-	-
22	Provision for Warranties	0.79	7.14	-0.92	8.8	14.07	-	-	-	-
23	Discount accrued on Bonds (Net)	1.22	-0.02	-11.39	-1.76	(0.14)	-	-	-	-
24	Provision for Impairment	4.48	39.29	0	1,800.00	850.00	-	-	-	-
25	Provision for Restoration and Rehabilitation	48.47	40.45	58.86	48.48	70.05	-	-	-	-
26	Grants/Consumer Contributions transferred	-5.21	-7.9	-59.74	-23.72	(26.04)	-	-	-	-
27	Loss on sale/retirement of assets (Net)	9.79	8.88	-2.91	7.29	8.09	-	-	-	-

7.4 Revenue Metrics Snapshot

Tata Power Final 2.xlsx - Microsoft Excel

	A	D	E	F	G	H	I	J	K	L
1	**Tata Power**									
2	**Template**									
3	(All data is Crore INR, except per share information)									
4	(Red for assumptions, Blue for actual data, **Black** for calculations)									
5	Date	March-10	March-11	March-12	March-13	March-14	March-15	March-16	March-17	March-18
6	Year	2010 - A	2011 - A	2012 - A	2013 - A	2014 - A	2015 - E	2016 - E	2017 - E	2018 - E
7										
8	Power Business			12,305.62	16,169.59	23,382.73	28059.28	30304.02	31819.22	33410.18
9	Coal Business			6,400.47	9,196.52	8,661.04	9007.48	9367.78	9742.49	10132.19
10	Inter-Segment Revenue			190.36	220.49	0	0	0	0	0
11										
12	Sales Turnover	12,254.75	12,960.95	18,515.73	25,145.62	32,043.77	37,066.76	39,671.80	41,561.71	43,542.37
13	Other Income	5,628.32	6,520.39	935.03	855.78	981.66	474.36	547.81	634.80	709.09
14	Stock Adjustments	79.76	-9.61	-3.34	177.01	275.12	103.79	103.79	103.79	103.79
15	**Total Income**	17,956.31	19,460.78	19,447.42	26,178.41	33,300.55	37,644.90	40,323.39	42,300.30	44,355.25
16										
17										
18										
19										
20										

7.5 Cost Metrics Snapshot

Tata Power Final 2.xlsx - Microsoft Excel

	A	D	E	F	G	H	I	J	K	L
1	**Tata Power**									
2	**Cost Metrics**									
3	(All data is Crore INR, except per share information)									
4	(Red for assumptions, Blue for actual data, **Black** for calculations)									
5	Date	March-10	March-11	March-12	March-13	March-14	March-15	March-16	March-17	March-18
6	Year	2010 - A	2011 - A	2012 - A	2013 - A	2014 - A	2015 - E	2016 - E	2017 - E	2018 - E
20	Interest	948.57	1,481.03	868.37	1,527.09	2635.53	0.00	0.00	0.00	0.00
21	Tax	991.40	657.67	993.77	1,474.65	1190.03	1330.53	1425.20	1495.07	1567.70
22										
23	**Common Size Analysis (As % of Total Sales)**									
24	Raw Materials	1.19%	1.05%	2.60%	2.82%	1.15%	1.15%	1.15%	1.15%	1.15%
25	Power & Fuel Cost	55.17%	47.59%	55.16%	47.03%	51.92%	50%	50%	50%	50%
26	Employee Cost	2.93%	3.64%	4.16%	4.31%	3.93%	4.25%	4.25%	4.25%	4.25%
27	Other Manufacturing Expenses	9.26%	15.64%	5.17%	19.13%	13.32%	13.32%	13.32%	13.32%	13.32%
28	Selling and Admin Expenses	7.13%	9.52%	0.00%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%
29	Miscellaneous Expenses	1.03%	1.57%	7.71%	5.01%	8.94%	8.94%	8.94%	8.94%	8.94%
30	Preoperative Exp Capitalised	-0.93%	-5.57%	0.00%	0.26%	0.00%	0.00%	0.00%	0.00%	0.00%
31	Total Operational Expenses	75.78%	73.44%	74.79%	78.87%	78.10%	77.66%	77.66%	77.66%	77.66%
32	Depriciation	3.66%	4.51%	4.94%	5.02%	6.09%				
33	Interest	5.28%	7.61%	4.37%	5.74%	7.83%				
34	Tax	5.52%	3.38%	5.00%	5.54%	3.53%	3.53%	3.53%	3.53%	3.53%

7.6 Asset Valuation

Tata Power Final 2.xlsx - Microsoft Excel

	A	D	E	F	G	H	I	J	K	L	M
1	**Tata Power**										
2	**Asset Valuation**										
3	(All data is Crore INR, except per share information)										
4	(Red for assumptions, Blue for actual data, **Black** for calculations)										
5	Date	March-10	March-11	March-12	March-13	March-14	March-15	March-16	March-17	March-18	
6	Year	2010 - A	2011 - A	2012 - A	2013 - A	2014 - A	2015 - E	2016 - E	2017 - E	2018 - E	
7											
8	Net Block	11,370.74	12,162.18	16,037.38	27,678.36	41,426.59	40,990.94	39,162.14	37,105.21	35,241.85	
9											
10	Depriciation	656.49	877.68	980.24	1,334.64	2,051.69	3,070.79	3,038.50	2,902.94	2,750.47	
11	Depriciation as % of Net Block	#DIV/0!	7.72%	8.06%	8.32%	7.41%	7.41%	7.41%	7.41%	7.41%	
12											
13	Purchase of Assets (Capex)				5,350.70	4,270.21	2635.14	1209.70	846.01	887.10	
14	Purchase of Assets as % of Total Sales				20.12%	12.68%	7.00%	3.00%	2.00%	2.00%	
15											
16											

7.7 Valuation Snapshot

	A	D	E	F	G	H	I	J	K	L	M	N	O	P
1	**Tata Power**													
2	**Valuation**													
3	(All data is Crore INR, except per share information)													
4	(Red for assumptions, Blue for actual data, **Black** for calculations)													
5	Date	March-10	March-11	March-12	March-13	March-14	March-15	March-16	March-17	March-18				
6	Year	2010 - A	2011 - A	2012 - A	2013 - A	2014 - A	2015 - E	2016 - E	2017 - E	2018 - E				
38	NOPAT	1956	2670	2986	3274	3580	3755	2440	2560	2686	2820	2960	3108	
39	Add: Dep.	2052	3071	3039	2903	2750	2885	2440	2560	2686	2820	2960	3108	
40	Less: Capex (Purchase of Assets)	4270	2635	1210	846	887	930	976	1024	1075	1128	1184	1243	
41	Change in Working Capital	-608	-10	-375	-3023	-2351	-2351	-2351	-2351	-2351	-2351	-2351	-2351	
42	FCFF	-871	3,096	4,439	2,308	3,092	3,358	1,553	1,745	1,947	2160	2,385	2,622	
43														
44									-0.02%					
45	y/y% growth in Total Sales		12%	7%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
46	EBITDA Margin		22.3%	22.3%	22.3%	22.3%	22.3%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	
47	Capex as % Sales		7.0%	3.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
48	Depriciation as % Sales		8.2%	7.5%	6.9%	6.2%	6.2%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	
49														
50	FCFF		3,096	4,439	2,308	3,092	3,358	1,553	1,745	1,947	2,160	2,385		
51	Terminal Value											87188.06		
52	Total Cash Flow		3,096	4,439	2,308	3,092	3,358	1,553	1,745	1,947	2,160	89,573		
53														
54	EV	58,650.25												
55	Less: Debt	37,097												
56	Add: Cash	1989.89												
57	Equity Value	23,543												
58	Intrinsic Price	99.21												
59	%Upside/Downside	27.35%	Buy / Overweight											