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Sharp Developments
Delivering Sustainable Solutions

Way Forward

EVOLVING THOUGHT LEADERSHIP ON GREEN CSR
INTERVENTIONS



9th July 2013, Indian Habitat Centre, New Delhi

Support the Society in a Greener way

POWER PLUS: GREEN SOLUTIONS BY IndianPowerSector.com

Preface

In context of growth and development of any nation, energy forms the backbone of the economy, and to support the development of the economy the energy needs are required to be addressed in the best possible manner.

IndianPowerSector.com is pleased to be the knowledge partner for the first ever conference on "EVOLVING THOUGHT LEADERSHIP ON GREEN CSR INTERVENTIONS "which is organized by Sharp Developments, along with the support of MNRE, Government of India.

The conference is a unique and excellent initiative to define the boundaries of green energy CSR and channelize the potential funds for sustainable development. It will provide a platform to all the decision makers and stake holders in various government agencies and corporate world to align and integrate their CSR verticals in a greener way-through green energy.

The backgrounder covers the existing guidelines, amalgamation of CSR and Green energy at various levels and recommendations suggesting a greener approach to be followed to fulfill CSR goals.

I wish to acknowledge the labor and extensive research work done by the research analysts at IPS; Mr. Abhishek Amarnani and Mr. Kalyan Verma.

The support and expertise of Team Re-Mark as co-authors was also very critical to analyze the potential of the subject and its very important conclusion.

Team IPS is extremely grateful to Sharp Developments to provide us with the opportunity to be a part of this great and critical initiative.

Going forward we sincerely hope the recommendations and deliberations from this conference will pave the way for defining the boundaries of Green Energy CSR. The outcome should be reflected in the enhanced uptake of renewable energy and energy efficiency based CSR initiatives.

Alok Tripathi

Co-Founder

IndianPowerSector.com

1. Introduction

The rapid pace of industrialization has exposed the environment to higher levels of risk. Pollution, greenhouse gas emissions, global warming and depletion of ground water level are serious issues which cannot be addressed with the Government's interventions alone. CSR (Corporate Social Responsibility) is the buzzword and it's time for the Corporates to do their bit for the environment which has been endangered with the industrial activities.

"Corporate Social Responsibility is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large."



Corporate Social Responsibility is broadly categorised by corporates under nine different segments as highlighted in Figure 1.1.

Figure 1.1: Segmentation of Corporate Social Responsibility

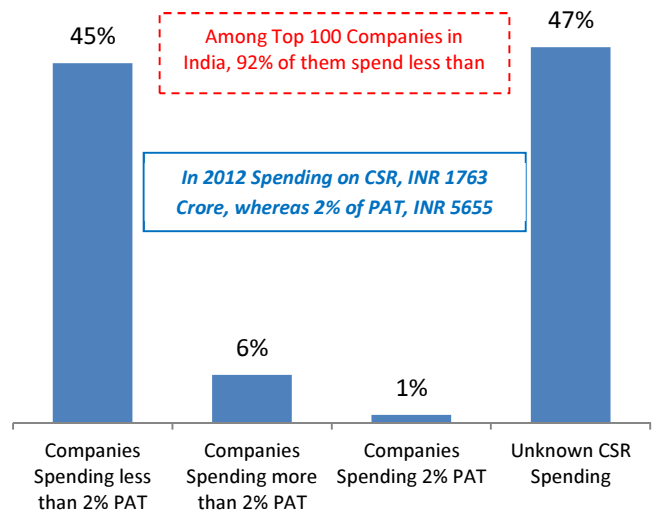
1. Eradicating Extreme Hunger and Poverty
2. Promotion of Education
3. Promoting Gender Equality and Empowering Women
4. Reducing Child Mortality, Improving Maternal Health
5. Combating Diseases Such as AIDS, Malaria
6. Ensuring Environmental Sustainability
7. Employment Enhancing Vocational Skills
8. Social Business Projects
9. Funds For Socio-economic Development

Source: IndianPowerSector.com Analysis

1.1 Organization Spending on CSR Activities

Currently, it is very difficult to find information on CSR activity in India. This problem partially stems from the fact that a lot of current CSR activity is donation-based rather than project based, and as such there is only a small amount of information on company websites and in financial reports. There are very few project impact studies and long-term studies detailing the kind of positive impact CSR activity has on a given community. An additional problem appears to be that very few companies are spending anywhere near 2% of their average profit after tax (PAT).

Figure 1.2: Spending on CSR Activities by 100 Profitable Companies in India 2012



Source: Forbes India Survey

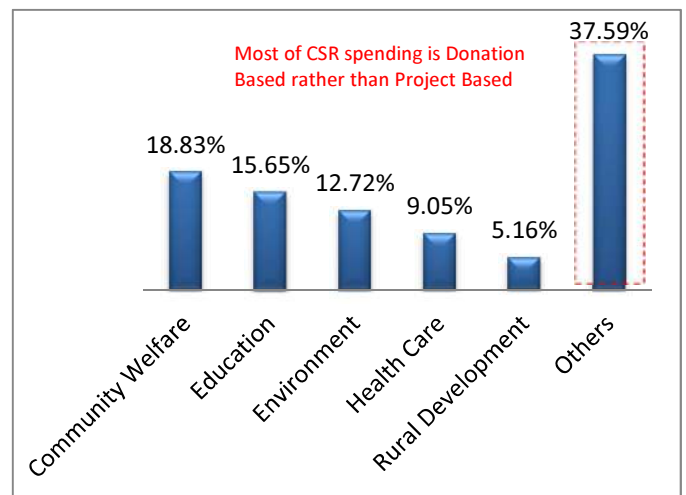
According to a Forbes Study, the top 100 most profitable companies (based on net sales in 2012) are only spending a total of ₹ 1763 crore on CSR activity, whereas 2% of PAT would be ₹ 5665 crore. This accounts for a difference of ₹ 3902 crore that should have been spent on CSR in the fiscal year 2012. Important to note is that 47% of companies surveyed either did not have CSR data or were not profitable. Therefore, the actual funds that should have been spent on CSR activity could in fact be greater than the stated ₹ 5665 crore.

1.2 Segment Wise CSR Spending

CSR in India has been slowly developing over the last forty years, but has taken a great leap forward in the last five, and again has been increased with the mandatory stipulations in the Companies Bill 2011. As of 2010, approximately 49% of India's 500 largest companies are reporting on CSR.

The majority of this CSR expenditure appears to be donation-based rather than project-based, and unfortunately there is not much information on the amounts being donated, nor measurable impact of said donations.

Figure 1.3: Segment Wise CSR Spending by Organizations in 2012



Source: ASSOCHAM

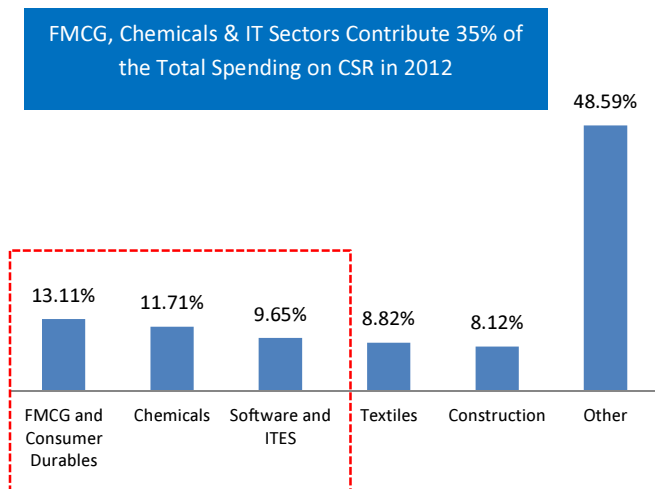
1.3 Sectors Contributing in CSR Activities

Based on an ASSOCHAM study, there are clear areas of improvement for corporations to invest in CSR activities, as currently only half of the top 500 Indian corporations are reporting a measurable amount of CSR activity. More reporting is clearly necessary if adequate data is to be collected on the state of CSR activity in India. If corporations can partner with NGOs, there should be a measurable increase in reporting of CSR activities, as well as data collected regarding the success of CSR projects.

However, without good reporting standards in place it becomes very difficult to measure both the scope and the effect of CSR across the country.

With partnership between corporations, NGOs and the government, reporting standards should increase and become more transparent, and thus will result in greater sustainability both of projects and of profits.

Figure 1.4: Sectors Contributing in CSR Activities in 2012



Source: ASSOCHAM

1.4 Focussing on Environment and Sustainability

Sustainability, climate change, energy and energy efficiency, green consumption and urban sustainable development are globally recognized challenges for the 21st century. Tackling these challenges requires a strong commitment from companies and private sectors, governments and agencies, NGOs.

The managers and professionals of tomorrow will require knowledge to understand the interconnectedness of economic, environmental and social dimensions, and competencies to manage and contribute the change towards a more sustainable world. Corporate Social Responsibility (CSR) is the way to achieve a greener world. CSR is not a new concept, but over the past decade its focus has been shifting from labour issues and local philanthropy toward environmental actions.

Numerous factors are driving this trend, including managerial altruism, cost-cutting efficiency improvements, the emergence of a new generation of green consumers, and savvy business leaders who take pro-active steps to avert political conflict rather than reacting to public pressure after the fact.

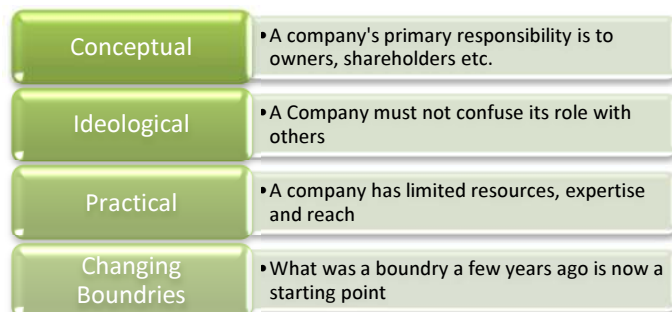
Figure 1.5: Approaches towards Green CSR

- Investment in Renewable Energy
- Renewable Energy Procurement - Renewable Energy Certificates
- Energy Efficiency Measures



Corporations are becoming more and more aware that they should be more careful with the footprints we leave behind. Huge corporations such as Wal-Mart are selling organic products because it promotes a healthy lifestyle for its customers and provides a positive image for the company worldwide.

Figure 1.6: Boundaries Defining Green CSR



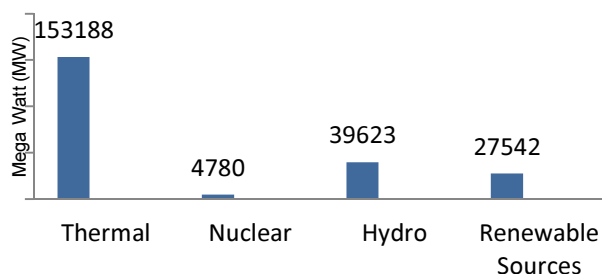
2. Renewable Energy in Indian Energy Mix

At present, India has 27,541.71 MW of installed renewable capacity excluding hydro power stations. India plans to double its renewable energy capacity to 55,000 MW by 2017 as part of efforts to increase efficiency of its energy use. The contribution of renewable energy to the total power generation is estimated to be 4.7%, 5.5% and 6.4% during 2010-11, 2011-12 and 2012-13 respectively. Renewable power generation capacity of 14,657 MW has been added in the country during the 11th Five Year Plan period.

A potential of over 2, 45,000 MW from various renewable energy sources have been estimated in the country. So far 28,067 MW renewable power generation capacities have been installed.

To encourage use of renewable energy sources, the Ministry encourages private sector investment and offers incentives such as Capital Subsidy, Generation Based Incentive, and Accelerated Depreciation for Renewable Energy Projects.

Figure 2.1: All India Generating Installed Capacity (MW) (as on 31-05-13)



Source: Central Electricity Authority

The National Action Plan on Climate Change (NAPCC) has taken into consideration the renewable energy potential including wind power potential in outlining the approach for the development of renewable energy in the country.

In keeping with the objectives and approach of NAPCC, the Ministry of New and Renewable Energy has set a target of capacity addition of 30,000 MW from renewable energy sources during 12th Plan period.

This includes 15,000 MW from wind, 10,000 MW from solar, 2,100 MW from small hydro and 2,700 MW from biomass including waste to energy. A Gross Budgetary Support of ₹ 19,113 crore has been allocated for the renewable energy activities for the 12th Plan period.

Figure 2.2: Source-wise and Year-wise Breakup of Targets Set During 12TH Plan Period (MW)

Source	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Wind Power	2500	2750	3000	3250	3500	15,000
Small Hydro Power	350	400	400	450	500	2,100
Bio-Power (including Waste to Power)	400	400	520	550	830	2,700
Solar Power	1000	1000	2000	2500	3500	10,000

Source: Ministry of Power

2.1 Integration of Renewable Energy & CSR

Renewable energies, such as wind, solar, and geothermal energies, are no longer considered to be merely complementary to thermal or nuclear power generation. Rather, they are widely recognized to have a core role in fulfilling our energy needs. Renewable energies such as wind, geothermal, and hydraulic power emit very little CO₂, one of the causes of global warming. These energies, by definition, cannot be depleted and help prevent the depletion of finite energy sources. Development and supply of these energies, therefore, is a very rewarding activity that can greatly contribute to global environmental conservation.

Businesses can make a very positive intervention in the society by adding renewable energy projects to their Corporate Social Responsibility (CSR) activities, which will help to improve the socioeconomic conditions of the marginalized. Organization's obligations are now extending beyond maximizing shareholder value and now also include steps to improve the quality of life of surrounding community and people. As a part of CSR a business can set up Renewable Energy Technologies like Solar, Biogas to serve energy needs.

Decentralized electricity generation using renewable and its distribution can become the new frontiers for CSR activities. Such projects reduce load on the grid, bridge the growing electricity deficit, provide regular electricity supply and generate local employment. As part of a CSR initiative in renewable space, organizations can set up renewable energy systems in villages that will be maintained by villagers who have undergone training. Installing a mix of solar panels, wind mills and biogas plants can make village energy self-sufficient or can opt for procuring renewable energy for their self-consumption from Renewable Energy Certificates of bilateral arrangements with Renewable energy developer. By adding renewable energy projects to their CSR activities, businesses will make a very positive intervention that will go a long way in improving the socioeconomic lot of disempowered.

Figure 2.3: Renewable Energy Initiatives under CSR Activities



Source: IndianPowerSector.com Analysis

2.1.1 Case for Renewable Energy Based CSR Solutions

Electricity forms the basis of infrastructure development and growth.

Of approximately 6,00,000 villages ; around 250,000 grid-connected villages are impacted by frequent power outages. 33,060 villages are unelectrified – where community tends to spend more on energy needs (kerosene) than Grid-Connected (electricity)

Off-grid renewable energy applications present a viable alternative for mitigating the country's energy risk in the face of fuel scarcity.

2.2 Grid Connected: Renewable Energy is The Future

The growing energy needs of the emerging economics, specifically India, risks enhanced environmental damage from conventional carbon based sources of energy. Renewable Energy technologies are deployed to curb the growing gap between the demand and supply of power, which is due to increase in the per capita energy consumption and importantly, the climate change concerns. The future of solar photovoltaic development in India

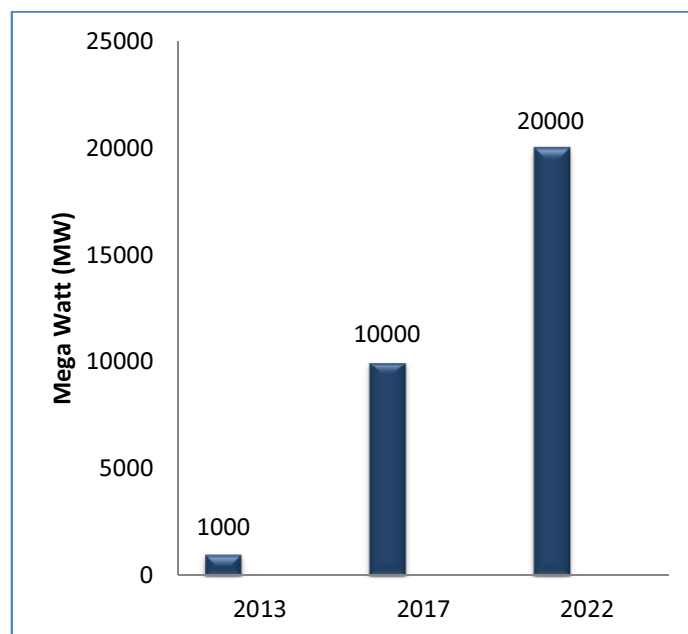
seems to be very bright. India's solar mission envisages the promotion of solar energy to harness and distribute environment-friendly power, available with high scalability, for sustainable economic growth by empowering national energy security.

Accelerated growth is expected in renewable energy sector with favourable conditions in terms of potential, technical support facilities, policy framework and regulatory environment, robust manufacturing base and investor's confidence in the country.

2.2.1 Solar Energy

India is located within the equatorial belt and receives plentiful solar radiation. Most parts of the country receive 250 to 300 days of bright days in a year. The government and private sectors are currently busy with the development of a large number of Solar Power Projects in India. Even though the percentage of power generated through solar energy in India is just a tiny fraction of its overall power production, it shares the number one spot in solar power generation capacity along with the United States. One of the major Solar Power Projects in India is an ambitious project undertaken by the government where it plans to generate 20 GW of power from solar energy by the year 2020. It further plans to increase this production to 200 GW by the year 2050. This project plans to increase the installed solar power capacity by a gigantic level by the year 2030 so as to significantly bring down the cost of electricity generation from solar power, almost at par with the power generated from fossil fuels.

Figure 2.4: Planned Installed Capacity from Solar (MW)



2.2.2 Wind Energy

Historically, wind energy has met and often exceeded the targets set for it under both the 10th Plan (2002-2007) and 11th Plan (2007-2012) periods. During the 10th Plan period the target set was of 1,500 M W whereas the actual installations were 5,427 MW. Similarly during the 11th Plan period the revised target was for 9,000 MW and the actual installations were much higher at 10,260 MW.

2.3 Off-Grid Solutions

Often remote areas or islands are not connected to the national power grid. They generate their own power from a diverse range of small local generators using both fossil fuels (diesel, gas) and locally available renewable energy technologies (solar PV, wind, small hydro, biomass, etc.) with or without its own storage (batteries) depending on the technologies

2.3.1 Solar Technologies - Solutions to Light Up and Electrify Rural India

The rural solar off-grid market has so far been driven mainly by government and NGO efforts. Though there has been increasing interest from corporates and investors (domestic and international) in exploring viable business opportunities to serve India's vast rural, un-electrified population.



In India, close to 40 million households in rural areas (approximately 33,000 villages) lack access to grid-connected electricity. Electrified households in the rural areas pay INR 106 a month on an average for electricity. This is less than the INR150 which un-electrified households spend for light from a kerosene lantern. Assuming such households are able and willing to pay the same as electrified households, the market potential is in the range of INR 90-95 billion per year.

Around 250,000 grid-connected villages with frequent power outages further increase this potential.

There are three key options for providing rural, off-grid, solar PV-based electricity solutions:

- Small applications with integrated power generation capacity (e.g. solar lanterns and solar street lights)
- solar home systems (SHS)
- Mini-grids.

Falling prices of photovoltaic cells in the last few years have increased the viability of solar energy projects. Solar powered cell phone charging stations where the villagers can charge their cell phones for a certain nominal payment will also help boost the off-grid solar PV market along with supporting the rural enterprise.



“Babul charges the cell phones of the villagers @ INR 5”

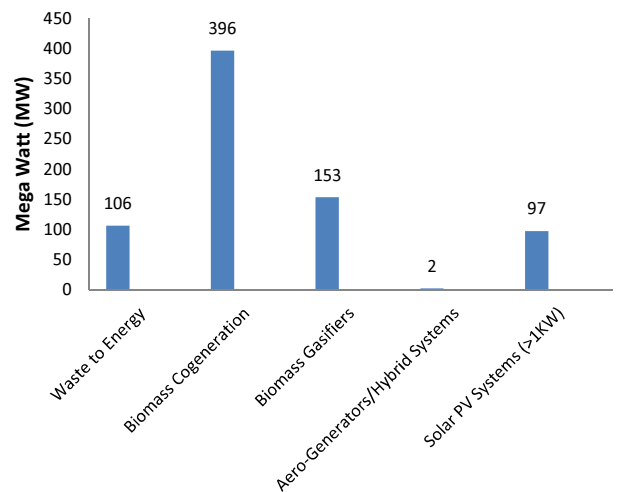
2.3.2 Solar - Hybrid Systems

With the advent of solar hybrid systems, urban India too is catching up. In these systems, solar PV modules charge the battery during day time while WEGs charge the battery during monsoon. Although current installed capacity of these systems is very low, it is expected that these systems will grow in areas with good wind potential.

2.3.3 Biomass

Around 87% of the off-grid installed capacity in the country comes from biomass (including Waste to Energy). Most of rural India is dependent on biomass for fulfilling its energy needs. However, burning biomass comes with several hazards to personal health and the environment. Off-grid renewable energy applications present a viable alternative for mitigating the country’s energy risk in the face of fuel scarcity. In rural India, energy is mainly required for cooking, lighting and agricultural activities. Biomass is the main source of energy due to easy availability.

Figure 2.5: Off-Grid RE Capacity (MW)



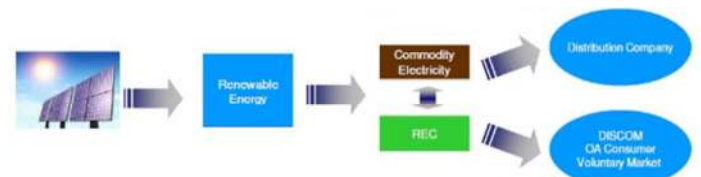
Source: Ministry of New and Renewable Energy

2.4 Renewable Energy Certificates (RECs)

2.4.1 About REC

Renewable Energy (RE) sources are not evenly spread across different parts of the country. On the one hand there are States (like Delhi) where the potential of RE sources is not that significant. On the other hand there are States (like Rajasthan and Tamil Nadu) where there is very high potential of RE sources. In such States there are avenues for harnessing the RE potential. However, the high cost of generation from RE sources discourages the local distribution licensees from purchasing RE generation beyond the mandated level.

Figure 2.6: Concept of Renewable Energy Certificates



Source: MNRE

It is in this context that the concept of Renewable Energy Certificates (REC) assumes significance. This concept seeks to address the mismatch between availability of RE sources and the requirement of the obligated entities to meet their RPO. It is also expected to encourage the RE capacity addition in the States where there is potential for RE generation as the REC framework seeks to create a national level market for such generators to recover their cost. Central Electricity Regulatory Commission (CERC) has notified Regulation on Renewable Energy Certificate (REC) in fulfilment of its mandate to promote renewable sources of energy and development of market in electricity. The framework of REC is expected to give push to RE capacity addition in the country.

“Voluntary buyers can purchase RECs from trading platform of Power Exchange of India Limited or Indian Energy Exchange, as part of CSR activity or to market their product as Green Product.”

The Department of Public Enterprise (DPE) recently expanded the scope of the Energy management Program of Public Sector Enterprises (PSEs) by including renewable energy as a specific activity to be pursued by public enterprises. The Ministry of Heavy Industries and Public Enterprises has asked all Central Public Sector Enterprises (CPSEs) to set up renewable energy projects or voluntarily purchase Renewable Energy Certificates (RECs).

2.4.2 Voluntary REC Market

RECs have been traded in India for 25 months now (since March 2011), and the market has grown in its value and depth. However, one aspect of the REC market that is common internationally, still to pick up in India – the procurement of RECs on a voluntary basis to meet Corporate Social Responsibility (CSR) / Green Marketing.

The procurement of RECs on a voluntary basis can help corporates meet Corporate Social Responsibility (CSR) mandate without actually implementing the renewable energy power projects. Any corporate entity can use RECs to offset their carbon footprint.

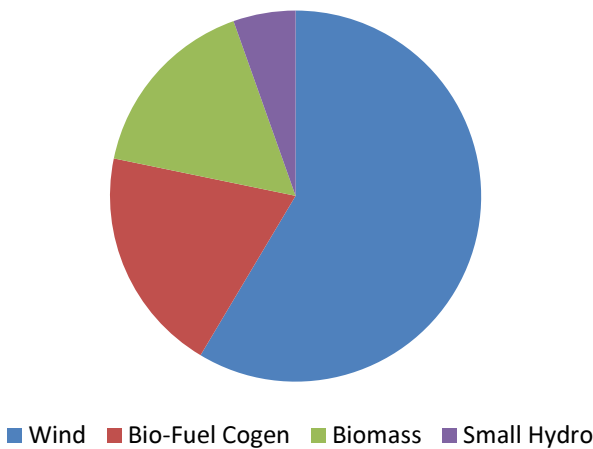
Following is the list of Voluntary REC buyer in the country:

- I. Rashtriya Ispat Nigam Limited
- II. Security Printing & Minting Corporation of India Limited
- III. POSOCO
- IV. IREDA
- V. IEX: Conferences
- VI. Manikaran Power Trading
- VII. EKI Energy Services Limited
- VIII. Neo Remark Marketing Services LLP (RE-Mark)
- IX. Green Portal: IndianPowerSector.com
- X. Green Conference: Evolving Thought Leadership on GREEN CSR Interventions Conference

2.4.3 Registered Capacity under Rec Mechanism

There is total of 3,615 MW (by 09 June 2013) of renewable energy capacity registered under REC mechanism.

Figure 2.7: Registered Capacity (MW)



Recently, Neo Remark Marketing Services LLP (RE-Mark), India's first labelling program which identify product, organizations and events which utilize renewable energy in their operations. RE-Mark assisted IndianPowerSector.com in procuring RECs and provided label making them India's First Green Website utilizing 35% of Renewable Energy.

2.4.5 Market Sizing

As per the latest amendments to the Companies Bill by the Union Cabinet, based on recommendations of the Parliamentary Standing Committee on Finance and inter-ministerial discussions, CSR has been made obligatory on part of companies. The qualifying criterion that would make the CSR mandatory is: Companies having a minimum net worth of INR 500 crore or turnover of INR 1000 crore or a net profit of INR 5 crore during any financial year. Regarding the amount of expenditure on CSR activities, it has been stipulated that at least 2 per cent of the average net profits of the company during three preceding financial years shall be spent on CSR every year. Further, the companies have been mandated to formulate a CSR policy and to disclose the activities undertaken and the related spending.

Model I

With the CSR budget as a driving factor for investment in voluntary renewable energy, average of last three years profit of companies of top 500 Indian companies have been taken into account to estimate the market potential. Consequently, average of last three year profits of companies has been calculated as INR 326637 crore (Economic Times, ET 500 List, 2009, 2010, 2011). Author believes 80 per cent of the demand will come from top 500 companies (having turnover of greater than 500 crore) and they would act as sustainability leaders and would procure voluntary renewable energy for branding and to differentiate themselves from competitors This would be in line with the voluntary renewable energy market in USA where the Environment Protection Agency (EPA) of US has a list of Fortune 500 partners, which contains 79 companies and which contributes to majority of voluntary renewable purchase. (United States Environment Protection Agency Green Power Partnership, 2012)

Hence, considering 2 per cent of the average profit of 500 companies as funding available for CSR budget, a sum of INR 6532 crore is calculated. Further, owing to limitations of data, it is assumed that 10 per cent of the

total CSR fund would be set aside for voluntary renewable energy purchase, which amounts to 653 crore.

Moreover, as mentioned earlier, 20 per cent of voluntary renewable energy purchase would be through corporates, which are not included in top 500 list, and with same percentage of allocation of fund for CSR, the total amount that could come is INR 163 crore. Adding both the sum, a market potential for voluntary REC purchase of INR 816 crore is estimated.

However, it is important to note that since no study has been done for estimating market potential for voluntary renewable purchase market across the globe and given the fact of absence of its market in India, due to various reasons like new market of renewable energy certificates lack of awareness among corporates regarding benefits of voluntary purchase; the market size arrived in first paragraph is only a preliminary estimate and is prone to errors.

Model II

Owing to the fact of a very preliminary estimate of voluntary renewable energy market size, one another way of estimating the market size is devised through assuming a fixed percentage of a corporate expense on RE requirement of its total revenue. As per a study by Bloomberg New Energy Finance and Vestas on Global Corporate Renewable Energy Index (CREX) 2012, using data from the Bloomberg terminal, it has been calculated that total cost of renewable energy is a small proportion of the publically listed companies' revenue on average i.e. 0.02 per cent. Hence estimating market potential of voluntary renewable purchase through this figure, by assuming it as a standard and replicable for Indian market, a market size of INR 745 crore is obtained (excludes 20 per cent component). Again utilizing 80:20 principle, an overall market size of voluntary renewable purchase of INR 931 crore is obtained.

Figure 2.8: Market Potential Estimation of Unrestricted Voluntary REC Market in India (INR Crore)

1. Lower Bound Market Size Estimation of Voluntary REC purchase						
Profit After Tax (PAT)	Average PAT	CSR Budget [^]	Expenditure on REC Purchase by ET 500 ^{^^}	Expenditure by Non ET 500 on REC purchase ^{^^^}	Market Size	
2009	260298	326637	6532	653	163	816
2010	308316					
2011	411298					
2. Upper Bound Estimation of Voluntary REC Purchase						
Revenues	Average Revenue	Expenditure on REC Purchase by ET 500 ^{^^^}	Expenditure by Non ET 500 on REC Purchase ^{^^^^}	Market Size		
2009	3329277	745	186	931		
2010	3531540					
2011	4318850					

Source: RE-MARK Analysis

*PAT corresponds to sum of total PAT of top 500 companies as per ET list for a particular year
[^] 2% of Average PAT
^{^^} 10% of CSR Budget
^{^^^} 0.02% of Average Revenue
^{^^^^} 20% of Expenditure on REC Purchase by ET 500
[#]Revenue corresponds to sum of total revenue of top 500 companies as per ET list for a particular year

2.4.6 Issues and the Way Forward

The developing structure of the REC market is dependent on the policies and regulations that define it. The current regulation on meeting yearly RPO compliance has resulted in a liquidity loss with active REC trading being postponed to the last few months of the financial year. The compliance window thus needs to be shortened to a quarter or half year to ensure continuous procurement by the obligated entities, leading to a robust and vibrant REC market. Subsequently price discovery would be better with sellers receiving sufficient bid prices across the year and buyers being able to purchase certificates at low prices.

The lack of long-term visibility on floor and forbearance prices beyond five years impacts the financial planning of renewable energy developers. The double-sided closed auction design for RECs does not suit the nature of the product as there is no fundamental cost basis for REC trading.

There is also a need to increase awareness about voluntary REC purchase among corporates, individuals and non-governmental organizations. The declining REC market must be given a push by its mandatory enforcement by the State Electricity Regulatory Commissions.

2.5 Energy Efficiency Measures

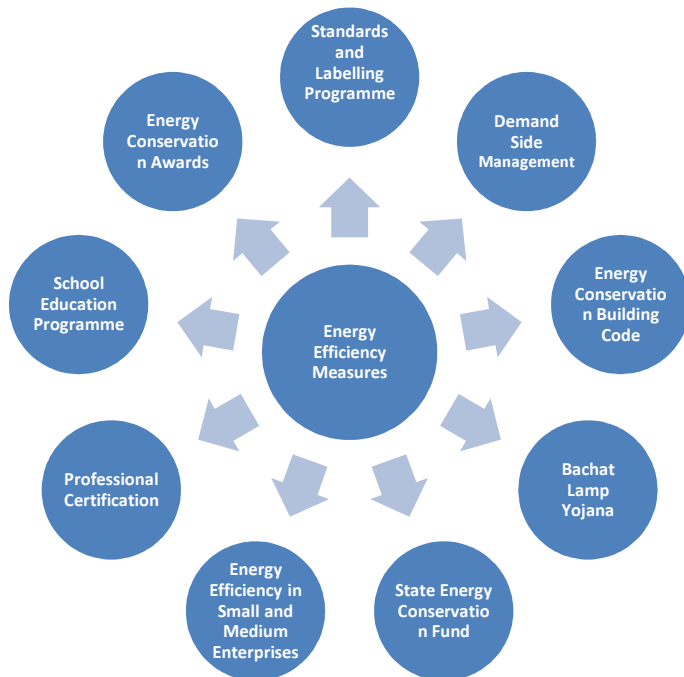
Energy efficiency is a way of managing and restraining the growth in energy consumption. Energy efficiency offers a powerful and cost-effective tool for achieving a sustainable energy future.

Improvements in energy efficiency can reduce the need for investment in energy infrastructure, cut energy bills, improve health, increase competitiveness and improve consumer welfare. Environmental benefits can also be achieved by the reduction of greenhouse gases emissions and local air pollution.

Energy security – the uninterrupted availability of energy sources at an affordable price – can also profit from improved energy efficiency by decreasing the reliance on imported fossil fuels.

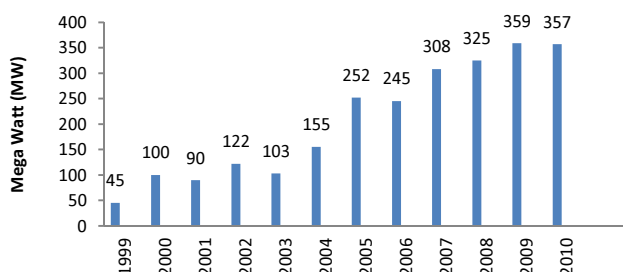


Figure 2.9: Various Energy Efficiency Measures



Source: IndianPowerSector.com Analysis

Figure 2.10: Electrical Energy Savings In Terms of Equivalent Avoided Capacity in (MW)



Source: powermin.nic.in

It is estimated that National energy Conservation Award Scheme would help in motivating the other energy consumers in joining and promotion of a nationwide energy conservation movement.

“1 unit energy saved = 1.5 units energy generated”

3 Role and performance of PSUs and Corporate houses

3.1 Guidelines for Public Sector Utilities

In the context of public sector enterprises Corporate Social Responsibility (CSR) should be viewed as a way of conducting business, which enables the creation and distribution of wealth for the betterment of its stakeholders, through the implementation and integration of ethical systems and sustainable management practices.

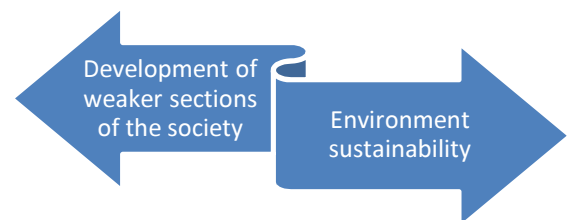
Department of Public Enterprises (DPE) issued new ‘Guidelines on Corporate Social Responsibility and Sustainability for Central Public Sector Enterprises on 12th April 2013. In the revised guidelines, the thrust of CSR and Sustainability is clearly on capacity building, empowerment of communities, inclusive socio-economic growth, environment protection, promotion of green and energy efficient technologies, development of backward regions, and up lifting of the marginalized and under-privileged sections of the society.

Making it mandatory in the revised guidelines for CPSEs to take up at least one major project for development of a backward district has the potential of contributing significantly in the long run to socio-economic growth in all the backward regions of the country.

3.1.1 Directions for CPSEs to Undertake CSR Projects

- CPSEs are encouraged to take up long gestation, high impact projects from the budget allocated for CSR and Sustainability activities.
- In the selection or choice of CSR and Sustainability projects, companies should avoid taking up ad hoc, one time, philanthropic activity, which does not contribute in any way to social value creation, environment protection or sustainable development.
- Priority should be accorded to activities pertaining to –

Figure 3.1: Priorities of CPSEs towards CSR



1. In the first category of activities mentioned above, CSR and Sustainability initiatives should focus on capacity building, skill development and infrastructural development. Each CPSE will have to select one such backward district for initiating CSR and Sustainability projects with a-prior assessment of the expected level of beneficial impact on the largest number of stakeholders from the budget and other resources at its disposal for such a project.
2. In the second category of activities mentioned above, CPSEs will have to plan for environmental sustainability and take up projects for water, waste or energy management, promotion of renewable sources of energy, biodiversity conservation, etc.
3. Reputed and recognised, not-for-profit institutions which have the expertise and professional competence for conducting training, skill development and other capacity building activities that promote inclusive growth and sustainable development can be supported by CPSEs through CSR and Sustainability initiatives.

3.1.2 Budgetary Allocation by CPSEs for CSR

Every year, each CPSE shall with the approval of its Board of Directors make a budgetary allocation for CSR and Sustainability activities / projects for the year. The budgetary allocation will be based on the profitability of the company. More specifically, it will be determined by the Profit after Tax (PAT) of the company in the previous year as shown here under:

Figure 3.2: Range of Budgetary Allocation for CSR for CPSEs

PAT of CPSE's (2012)	Range of budgetary allocation (%PAT)
Less than ₹ 100 crore	3% - 5%
₹ 100 crore to ₹ 500 crore.	2% - 3%
₹ 500 crore and above	1% - 2%

- The budget allocated for CSR and Sustainability activities / projects planned for each financial year is expected to be spent within that year. If due to some reason, the budget of a year remains unutilised, the same would not lapse, instead it would be carried forward to the next year.
- At least 80% of the annual budget earmarked for CSR and Sustainability activities shall have to be spent on implementation of activities in the project mode as explained earlier.
- Up to 5% of the annual budget for CSR and Sustainability activities has to be earmarked for Emergency needs, which would include relief work undertaken during natural calamities / disasters, and contributions towards Prime Minister's / Chief Minister's Relief Funds and/or to the National Disaster Management Authority.

Generally, the employees of a CPSE should not be the direct beneficiaries of the activities undertaken with the budget allocated for CSR and Sustainability initiatives in any given year.

However, an exception can be made in case of schools, hospitals, training institutes etc. provided they do not constitute more than 25% of the total number of beneficiaries of such facilities.

3.1.3 Sustainability Reporting and Disclosure

Recently, Securities and Exchange Board of India (SEBI) has made mandatory for the top 100 companies in terms of market capitalisation to submit their Business Responsibility Reports. For the others, it is still a voluntary disclosure and reporting at this stage.

For CPSEs, sustainability reporting and disclosure of all CSR and Sustainability activities undertaken by a CPSE is mandatory and is to be reported annually, this reporting can be done by CPSEs, as per the Global Reporting Initiative (GRI) guidelines.

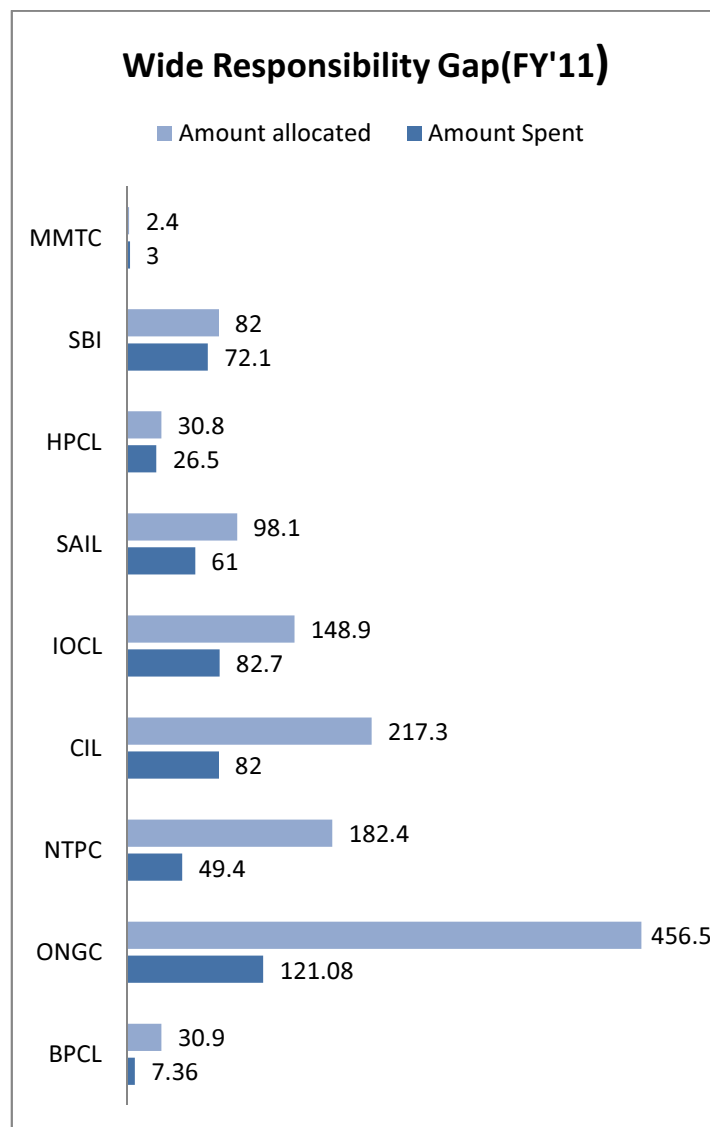
Figure 3.3: Mandatory Projects for CPSEs



By reporting transparently and with accountability, public sector companies can gain and reinforce the trust of the stakeholders. This, in turn, would provide a powerful stimulus to their CSR and Sustainability policies and agenda, and motivate them to pursue them with greater vigour.



Figure 3.4: CSR of Ten Largest PSUs*



Source: IndianPowerSector.com Analysis

#data for BHEL not included

With the New Companies Bill 2012 almost certain to pass soon, the government is trying to coax private companies to spend more money in fulfilling their corporate social responsibilities but public sector undertakings remain laggards.

“Ten large PSUs, which were together mandated to spend ₹ 1,3703 crore in FY12, managed to disburse only 504 Crore, 36% of the funds allocated for CSR”

PSUs are still identifying projects to comply with the norms on CSR spends laid out by Department of Public Enterprises (DPE).

Some PSUs struggle for want of dedicated CSR professionals who can direct the money well, others for an insular mind-set and lack of partnerships with the NGOs, yet others for inability to identify good social projects or, simply put, lack of a top management vision for CSR.

3.2 Salient Features of Companies Bill, 2012 on CSR

As per the new Companies Bill 2012, which is yet to be passed by Rajya Sabha; CSR spending has been made obligatory for designated CPSE's.

Every company having:

1. Net worth of rupees five hundred crore or more, or
2. Turnover of rupees one thousand crore or more or
3. A net profit of rupees five crore or more during any financial year

Shall constitute a Corporate Social Responsibility Committee of the Board consisting of three or more directors, out of which at least one director shall be an independent director.

- The Board's report under sub-section (3) of section 134 shall disclose the composition of the Corporate Social Responsibility Committee.

The Corporate Social Responsibility Committee shall:

- a. Formulate and recommend to the Board, a Corporate Social Responsibility Policy which shall indicate the activities to be undertaken by the company as specified in Schedule VII;
- b. Recommend the amount of expenditure to be incurred on the activities
- c. Monitor the Corporate Social Responsibility Policy of the company from time to time.

The Board of every company shall ensure that the company spends, in every financial year, at least two per cent of the average net profits of the company made during the three immediately preceding financial years, in pursuance of its Corporate Social Responsibility Policy.

The company shall give preference to the local area and areas around it where it operates, for spending the amount earmarked for Corporate Social Responsibility activities.

3.3 Existing National and International Guidelines

There exists various national and international guidelines on CSR for the Indian companies; almost all guidelines are broadly based on Global Reporting Initiative (GRI). While some guidelines give step by step procedures for implementation of CSR in the company others give broad, loose guidelines for CSR to be based on.

Following given are one national CSR guideline - FICCI Voluntary CSR Guidelines and two international CSR guidelines - Organisation for Economic Co-operation and Development (OECD).

3.3.1 FICCI Voluntary CSR Guidelines

1. The company shall have CSR as an integral part of overall business policy driven by vision and philosophy that includes definition of CSR and how it aligns it with its business goals.
2. The company shall formulate a CSR policy to guide its strategic planning and providing a roadmap to its CSR initiatives.
3. The policy may broadly cover caring for employees, community, climate & environment, (including skill development and livelihood, health, safety, education, minimizing carbon footprint, protection of environment, inclusion of disadvantaged & vulnerable sections of the society), non-discrimination, transparency, anti-corruption and human rights.
4. The company may have a CSR Advisory Committee led by a CSR expert and endeavour to involve various levels of executive participation in formulation and integration of CSR Policy.
5. The company shall specify a time period after which the CSR policy shall be put up for strategic review and gauge the impact, relevance of its components and fine tune/augment it in tandem with the changing times/business/societal needs.
6. The company shall have a structure for the implementation of CSR policy and involvements of external partnerships.
7. The company shall earmark specified resources or a proportion of their Post Tax Profit for activities related to corporate social responsibility initiatives.
8. To ensure optimum utilization of resources and maximum impact the company shall set measurable target, wherever possible and review the progress internally. Periodically the company may get external evaluation as may be considered appropriate by it.
9. The company shall be producing and disseminating information on CSR policy and activities, as well as progress to all their stakeholders and the public at large through their website, annual reports, and other communication media.

10. The company shall endeavour to create a spirit of volunteerism among the employees and encourage the employees to volunteer for community development initiatives.
11. The company shall endeavour to influence the supply chain in adopting and adhering to best CSR practices.
12. The company shall have an explicit strategy to focus on CSR issues of immediate concern in the areas that they operate in. The company may work through partnerships or leveraging Government's schemes to undertake CSR activities. The company shall endeavour to partner and network with civil society organizations to carry forward the agenda of CSR.
13. The company shall endeavour to build the image as a socially responsible company.
14. To share experiences and network with other organizations the company may engage with well-established and recognized programmes / platforms such as the FICCI-ADITYA BIRLA CSR CENTRE FOR EXCELLENCE, UN Global Compact and the like, which encourage Responsible Business Practices and CSR activities.

3.3.2 The Global Reporting Initiative (GRI)

The **Global Reporting Initiative (GRI)** is a non-profit organization that promotes economic sustainability. It produces one of the world's most prevalent standards for sustainability reporting. The GRI aims to harmonize reporting standards for all organizations, of whatever size and geographical origin, with the aim of elevating the status of environmental reporting with that of, for example, financial auditing. Environmental transparency is one of the main areas of business under the scope of the GRI.

GRI encourages participants to report on their environmental performance using specific criteria. The standardized reporting guidelines concerning the environment are contained within the GRI Indicator Protocol Set. The Performance Indicators (PI) includes criteria on energy, biodiversity and emissions. There are 30 environmental indicators ranging from materials used by weight to total environmental expenditures by type of investment. GRI also gives principles designed to be used in combination to define the sustainability report content, the principles are:

- **STAKEHOLDER INCLUSIVENESS:** The organization should identify its stakeholders, and explain how it has responded to their reasonable expectations and interests. The reasonable expectations and interests of these stakeholders should still be acknowledged in decisions about the content of the report. It is important that the process of stakeholder engagement is capable of identifying direct input from stakeholders as well as legitimately established societal expectations.
- **SUSTAINABILITY CONTEXT:** The report should present the organization's performance in the wider context of sustainability. This concept is often most clearly articulated in the environmental arena in terms of global limits on resource use and pollution levels. However, it may also be relevant with respect to social and economic objectives such as national or international socio-economic and sustainable development goals.
- **MATERIALITY:** The report should cover Aspects that: Reflect the organization's significant economic, environmental and social impacts; or substantively influence the assessments and decisions of stakeholders Materiality for sustainability reporting is not limited only to those Aspects that have a significant financial impact on the organization. Determining materiality for a sustainability report also includes considering economic, environmental and social impacts that cross a threshold in affecting the ability to meet the needs of the present without compromising the needs of future generations.
- **COMPLETENESS:** The report should include coverage of material Aspects and their Boundaries, sufficient to reflect significant economic, environmental and social impacts, and to enable stakeholders to assess the organization's performance in the reporting period. For example, ensuring that compiled data includes results from all entities within the organization and entities, groups of entities, or elements outside the organization where significant.

3.4 OECD - A Step By Step Approach to Drafting a CSR Policy

Figure 3.5: OECD Framework for CSR



3.5 Companies with Highest Level CSR Rating

With the enforcement of Companies Bill, 2012, corporate social responsibility spending to the tune of 2% of profit will become compulsory but there are certain private companies that understand their responsibility towards the society and already are doing their bit towards the society. Some prominent examples of private companies in CSR are given below (in alphabetic order)

Figure 3.6: Companies CSR Activity

Company Name	Industry Category	Three CSR Areas
Ballarpur Industries Ltd	Paper	Livelihood creation, Education, Empowerment of women
Housing Development Finance Corporation Ltd.	Financial Services	Community welfare, Children, Healthcare
Infosys Technologies Ltd.	Information Technology, Software and ITES	Social Rehabilitation and Rural Upliftment, Learning and Education, Art and Culture, Healthcare
Kansai Nerolac Paints Ltd.	Paints	Community Welfare, Healthcare, Education
Larsen & Toubro Ltd.	Engineering and Machinery	Healthcare, Education, Vocational Training
Mahindra & Mahindra Ltd.	Automobiles	Environment, Education, Girl Child
Moser Baer (India) Ltd.	Engineering and Machinery	Livelihoods and Training, Education, Environment
Tata Consultancy Services Ltd.	Information Technology, Software and ITES	Energy, Community welfare, Education
Tata Steel Ltd.	Metals and Minerals	Environment, Community welfare, Rural development
Titan Industries Ltd.	FMCG and Consumer Durables	Education, Physically Challenged, Women
Wipro Ltd.	Information Technology, Software and ITES	Environment, Education, Energy

Source: Karamayog.org

4 Industry wise breakup: opportunities and bottlenecks

4.1 Information Technology (IT)

With the IT sector contributing 7.5 % towards India’s GDP in the financial year 2012¹, environmental sustainability and climate change will present substantial opportunities and risks for all stakeholders in the IT industry. In this reference, Green IT is defined as:

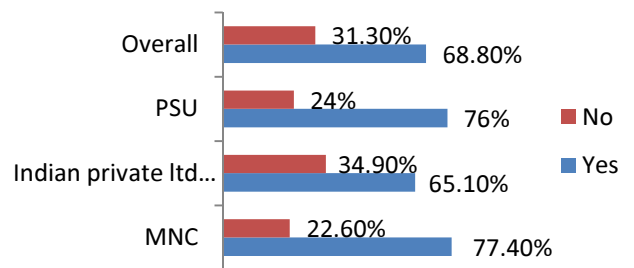
“Optimal use of information and communication technology (ICT) for managing the environmental sustainability of enterprise operations and the supply chain, as well as that of its products, services, and resources, throughout their life cycles”.

A report entitled “Green IT: The New Industry Shock Wave” released in 2007 by Gartner Inc., surprised all across the IT circles as it was the first to reveal that the ICT industry accounted for 2% of worldwide carbon dioxide emissions, equivalent to the airlines industry, which had long been perceived as the single largest contributor. The emissions came primarily from data centres housing monitors, servers and other components, which were integral to the operations of IT companies. The report estimating IT’s total CO2 emissions to be approximately 600 mega tonnes.

Also, the report points out that the IT industry is strategically positioned as it could bring down 98% of CO2 emissions caused by non-IT industries. This could be possible as the influence of computing and communications technologies that IT commands would help non-IT companies in myriad industries to bring down their carbon footprints. For example, the non-IT companies could substitute travel with teleconferencing, reduce employee commutes with telecommuting and minimise transactional delays with e-governance. Green IT is thus not about IT industry alone, it is a lot about non-IT industries discovering ways of sustainable business. At its simplest, Green IT helps IT companies reduce their own carbon footprint while enabling them to reduce the carbon footprint of their clients.

According ‘India Green IT survey’², close to 69% of the respondents admitted that they were aware of the Green IT. Not surprisingly the awareness levels were higher in the MNCs with some 77% admitting to know about the issue. Also a note worth taking is the high awareness levels among the PSUs, some 76% of them said that they were aware of Green IT. Also, the awareness level was the highest among the companies with annual revenues of ₹ 50-100 crore, around 79%. Big companies, with annual revenues of over ₹ 500 crore, came next.

Figure 4.1: Awareness level of Green IT in India



Source: www.continuityandresilience.com

4.1.1 Opportunities

Data centres: Data centres consume an enormous amount of energy, the energy consumed by data centres represents a financial burden on the organizations that operate them, and an infrastructure burden on power utilities. For example, the energy used by 10 megawatt data centre each year in India is equivalent to the energy consumption of 73,000 typical Indian urban houses or equivalent to energy consumed by 17,520 typical Indian cars³. Due to such high energy consumption, we are starting to see many “green” data centres powered (at least partially) by renewable sources of energy. These green data centres either draw directly from a nearby renewable power plant or generate their own electricity. Among other advantages, these types of ‘green’ data centre reduce the energy losses involved in power conversion and transmission over long distances. Solar and wind are two of the most promising sources of green energy for data centres, as they are clean and broadly available.

However, solar and wind has three main limitations today: the space they require, their capital costs and location constraints. Fortunately, predicted improvements in efficiency and reductions in Cost/Watt will alleviate these problems significantly in the future. For example, improvements in photovoltaic (PV) solar panels and new PV technologies are expected to triple today's efficiencies until 2030⁴. Over the same period, the Cost/Watt of PV panels is expected to become less than half of what it is today. For example, according to Central Electricity Regulatory Commission of India, the standard cost of 1 Megawatt solar plant has come down from ₹ 12 crore/MW to ₹ 8 MW/crore and is sliding further.

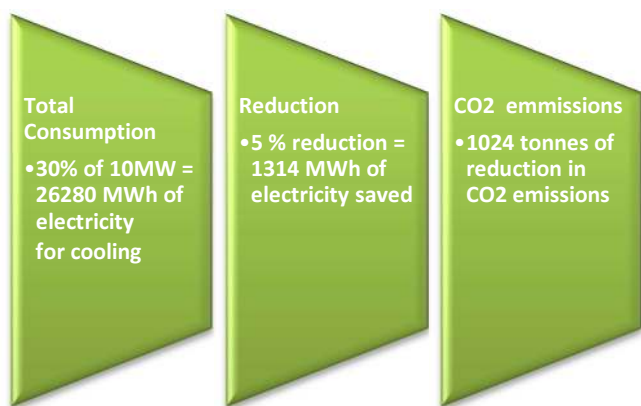
In addition, governments currently provide incentives for green energy generation, for example, Ministry of New & Renewable Energy (MNRE) Government of India, provides a capital subsidy of 30% on solar thermal systems⁵. If these incentives continue, cost factor may not be a significant one in the future. These trends suggest that solar and/or wind power will become increasingly attractive, especially for small and medium data centre as they require smaller and cheaper installations. Moreover, solar panels and/or wind turbines can be deployed in small increments for these data centre.

Services: Encompasses using information and communication technology (ICT) to improve the environmental sustainability of the products, activities and processes of the enterprise and includes its energy and material efficiency. This involves designing and providing stewardship of products and services while managing and optimizing these resources in an environmentally sensitive way as well as considering how ICT can be used to improve environmental sustainability.

Life cycle is particularly important in this, demanding consideration or stewardship from cradle to grave of those things over which the enterprise could reasonably be considered to have influence or choice. That may include managing the full life cycle of the enterprise products, and would certainly include considering the life cycle of the IT equipment being procured.

Cooling: Cooling requirement in the IT industry is required for almost all process ranging from data centres, products & services to air conditioning. Use of renewable energy for cooling purposes of the enterprise utilising the CSR fund of the company has the potential to bring down costs as well as reducing CO2 emissions in a big way leading to sustainable business by the enterprise while also fulfilling its CSR obligations.

Figure 4.2: CO2 emissions reduction due to 5% reduction in cooling requirements



Source: IndianPowerSector.com Analysis

But the Indian data centres show lower chiller plant efficiency – higher MWh/ton (the lower the MWh/ton the more the efficient is the cooling system), this may be caused by hot and humid conditions and greater use of air cooled chillers rather than water cooled with a cooling tower. Thus improvements in cooling systems for IT industry can provide substantial energy saving.

4.2 Telecom

As per the Telecom Regulatory Authority of India's (TRAI) around 1% of the total GHG emissions in India is from the telecom sector which is around 20 million tonnes of CO2 a year, in contrast the Global GHG emissions from

telecom sector is only 0.7%. Also, the average CO2 emissions per subscriber in India is around 21 Kg when compared to the global average of 8 Kg of CO2 emissions per subscriber.⁶

To reduce these emissions, TRAI and the Department of Telecommunications' (DoT) have issued directives on green telecom, that service providers must ensure at least 50 per cent of telecom towers in rural areas and 20 per cent in urban areas should run on hybrid power – a combination of renewable energy and grid power – by 2015. This should increase to 75 per cent and 33 per cent respectively by 2020.

Also, telecom operators have to declare their carbon footprint adopting the formulae and procedures as prescribed by TRAI. The formula is,

Figure 4.3: TRAI Formula for Calculation of Carbon Footprint

$$C = 0.365 [0.84Px + (0.528 yz / \eta)] \text{ in Tonnes}$$

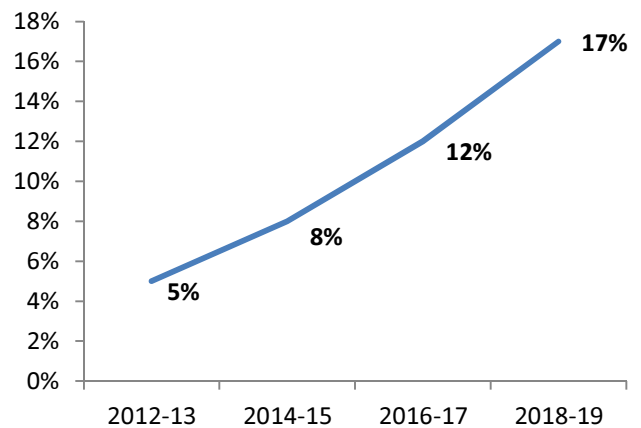
P = consumption of power of the Network element, in KW, grid power is for 'x' hrs. , the power from 'z' KVA Diesel Generator is for 'y' hrs and the efficiency of the generator is 'η'.

The declaration of the carbon footprints is to be half yearly, with the first half yearly report to be submitted by 15th November and the succeeding half yearly report to be submitted by 15th May each year.

Also, based on the details of the carbon footprints declared by all telecom operators, operators should aim at carbon emission reduction targets for the mobile network as shown in the graph.

Further, all products, equipment and services in the telecom network should be energy and performance assessed and certified "Green Passport" by 2015⁷. TRAI has stated that the Telecommunication Engineering Centre will certify telecom products, equipment and services on the basis of their energy consumption ratings. The directions given by the telecom regulator and approved by DoT have thus necessitated the use of green energy by telecom operators.

Figure 4.4: Year wise Carbon emission Reduction aim for telecom operators



Source: Telecom Regulatory Authority of India's (TRAI)

4.2.1 Opportunities

1 Infrastructure Sharing:

- Operators can jointly roll out telecom tower sites –both passive and active sharing – which could typically achieve a 30% CAPEX saving accumulated over five years. This will also reduce OPEX by 15% per year by the fifth year⁸.
- Active sharing of network infrastructure, which involves the sharing of antennae systems, backhaul transmission systems and base station equipment, will allow operators to save an additional 40% on top of available savings from passive infrastructure sharing.
- Sharing also results in reduction of number of generator sets and telecom masts installed, which leads to reduction in noise, air and visual pollution.

- d. For example, Indus Towers, which owns over 120,000 towers, is a three-way joint venture between Vodafone India, Idea Cellular and Bharti Infratel that owns passive infrastructure shared by the three partners in the 15 circles where the three firms have overlapping operations.



- 2 **Use of Renewable sources of energy:** The directives of TRAI and DoT make use of Renewable energy eminent, but even without these directives it makes economic sense for telecom operators to use Renewable energy as the following table illustrates.

Figure 4.5: Cost economics for use solar energy in telecom towers

Year of reference	2013	2016
Number of towers	480000	55000
Percentage of towers that are off-grid	33.3%	33.3%
Percentage of towers that are on-grid	66.6%	66.6%
Number of towers to be converted to hybrid systems	196800	34100
Number of tower that are on-grid	131069	22710
Number of tower that are off-grid	65534	11355
Prices to be compared (in INR)		
Diesel remote	24.31	32.36
Solar without storage	9.81	7.15
Grid (30%) + Diesel remote (70%)	18.79	24.63

Source: IndianPowerSector.com Analysis

4.2.2 Bottlenecks

- 1 **Regulatory issues:** TRAI’s recommendation has defined hybrid power as “renewable energy technology and grid”, with no mention of battery as backup, but no technology is sufficient to ensure 24x7 power supplies for telecom operations. Also, the formula used by TRAI for carbon footprint calculations is complex and erratic. For example, the efficiency of a DG set changes over time, usage and loading factor. There is no way to determine the change in efficiency of the DG set. However, since the proposed formula uses the efficiency factor as constant, it would lead to erroneous carbon footprint values.
- 2 **Site constraints and natural resource availability:** Not all locations make green power feasible or economical. In most cases, some type of green power supply can be deployed. However, there are areas where this is not an option or the ROI is too high to justify. Furthermore, seasonality variations in temperature and changing meteorological conditions can make it difficult for operators to predict performance and output.

- 3 **Network needs:** Renewable energy base stations are primarily deployed in areas where the grid is inconsistent or non-existent. Under these circumstances, it makes sense for operators to deploy green base stations, as they are the only or most efficient way to provide service to consumers. However, for larger sites in more populated areas where load requirements are high, renewable may not perform as needed.
- 4 **Lack of consistency and global standards:** Since the topic of green telecom is broad and encompasses all regions and numerous of ecosystem players, action is being taken on a variety of fronts. While such diverse actions may be useful and may move the ball faster, they also create a challenge in that there is no industry standard for all vendors and operators to meet.
- 5 **Upgrade timeframe:** Operators have invested in existing infrastructure, and although it will be replaced over time, they want to get the most out of their investment. Therefore, while upgrading to more efficient equipment may be appealing, it may not be immediately possible.
- 6 **Absence of subsidies for solar telecom towers:** MNRE does not grant subsidy to telecom sector for solar installations, which needs to be addressed.
- 7 Distributed application/site locations hence the cost of installation goes high.

4.3 Real Estate

Internationally there are many examples of mandatory green building standards being used to require a compulsory minimum environmental standard that all new development must meet. International evidence suggests that a combination of regulation and incentivizing best practice is the most effective way to drive rapid improvement in the building sector.

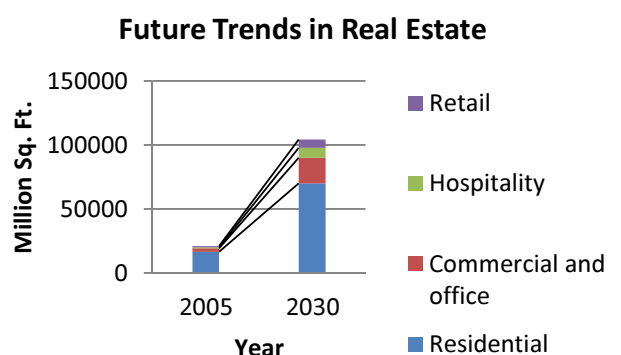
Mandatory standards for green building usually set a minimum standard and are not intended to outline best practice. In most cases it is important to consider mandatory standards for green building as a baseline that raises the standard from normal practice whilst also providing a platform that we must improve from.

In India, the building sector represents about 33% of electricity consumption in Indian, with commercial and residential sector accounting for 8% and 25% respectively. Estimates based on computer simulation models indicate that energy efficient buildings can use 40% to 60% less energy than conventional buildings. It is estimated that the nationwide mandatory enforcement of building efficiency code will yield annual savings of approximately 1.7 billion kWh⁹.



The future trend of building sector in India can be seen in the graph and in line with this the electricity consumption is expected to grow at 11-12 per cent per annum¹⁰.

Figure 4.6: Future Trends of Real Estate Sector in India



Source: “Growth of Indian building sector”, 2010

Figure 4.7: Green Buildings in India

Project	City	Area	Rating	Hike in cost (in %)	Payback period on cost premium (in years)
Sohrabji Godrej GBC	Hyderabad	20,000	Platinum	18	7
ITC Green Centre	Gurgaon	170,000	Platinum	15	6
Spectral Services	Noida	15,000	Platinum	8	4
Wipro	Gurgaon	175,000	Platinum	8	5
Technopolis	Kolkata	72,000	Gold	6	3

Source: CII

Keeping in mind the growth, Bureau of Energy Efficiency (BEE), India launched the Energy Conservation Building Code (ECBC) to provide minimum requirements for energy-efficient design and construction of buildings and their systems. The code is applicable to buildings or building complexes that have a connected load of 500 kW or greater or a contract demand of 600 kVA or greater.

BEE has also developed a Star Rating program for buildings which is based on the actual performance of a building in terms of its specific energy usage in kWh/sq. m/year. This program rates office buildings on a 1-5 Star scale, with 5 Star labelled buildings being the most efficient. The scheme is propagated on a voluntary basis and the label provided under it is applicable for a period of 5 years from the date of issue. However, since the ratings are limited to only energy efficiency, it cannot be considered a comprehensive green rating program.

4.3.1 Opportunities

Sourcing: Green energy procurement should be mandated for all commercial buildings and large residential complexes. For example, under ECBC it is mandatory for all upcoming new hotels, hospitals and large residential complexes to have solar water heating for at least 1/5th of their hot water requirements.

Heat recovery systems should also be encouraged for buildings using heating or cooling processes. For example, heat is rejected from the air conditioners condenser to the atmosphere, this waste heat can be recovered and utilized to heat water wherever feasible.

“Infosys has employed a mini-wind farm of 5 turbines of rating 5KW each at its Mangalore campus and also has solar plant installations of 127 KW and 252 KW at its Trivandrum and Jaipur campuses respectively”

Investor Demand: Investors are now recognizing the opportunity to profit from green building investments. Pushing investors into this arena have been the same societal forces propelling socially conscious investing – the desire among an increasing share of investors to feel good about the uses to which their capital are devoted. The Responsible Property Investing (RPI) movement advocates “triple bottom line” accounting that tracks environmental and social impacts, as well as the traditional financial returns. RPI is becoming especially common with public pension funds, which account for a large share of real estate ownership in the country.

Despite an on-going debate as to whether green buildings should be viewed as a distinct investment product, the rising prevalence of green real estate funds suggests that a specialized market does indeed exist – close to \$2 billion in announced plans worldwide already. Following are the few examples in India.



ITC Green Centre, Gurgaon

4.4 FMCG

The expected market size for FMCG in India will be 1.7 trillion by 2015 and the industry is expected to grow at the rate of 12% to 17% until 2020¹¹. The development of energy-efficient manufacturing, environmentally conscious supply chain, ecologically safe products and green marketing are all part of ‘green’ growth for FMCG sector which also leads to sustainable development.

4.4.1 Opportunities

Supply Chain: Competition in the global competitive environment has diverted the firms to shift from traditional supply chain to a resourceful and environmental conscious supply chain to sustain effective competitive edge. The sugar industry, for example, has great potential to contribute to our national power grid through the burning of cane fibre, called bagasse, which is a renewable energy source. This industry has a power-generation potential of 18 GW¹². Apart from its ability to generate electricity, this industry also have the resources to produce ethanol, which can be used in conjunction with petrol to fuel vehicles and locomotives in our transport and freight industries.

Also, a recent survey conducted by the Economist Intelligence Unit, showed the increased level of awareness as well as the operational changes taking place as more companies go ‘green’. According to it, 52% of the companies report that they are implementing some form of green-minded supplier qualification. An additional 39% say that they have plans in the near future.

Manufacturing: Manufacturing plants are certified to Environmental Management Systems (ISO 140001) by independent registrars, upon meeting the requirements stated in the ISO Management System standard. Implementing an environmental management system (EMS) is a process by which an organization’s management identifies regulated and unregulated environmental aspects and impacts of its operations, assesses current performance, and develops targets and plans to achieve both significant and incremental environmental improvements. Environmental aspects are human or industrial activities, products, or services that can interact with the environment.



A green manufacturing model can be like:--

Figure 4.8: Green Manufacturing Model



Source: Author's analysis

"ITC Ltd plans to invest ₹ 100 crore in renewable energy over the next two years. Renewable energy, which currently accounts for about 38 per cent of ITC's total manufacturing consumption, is estimated to meet up to 50 per cent of its total energy requirement in the next five years. The company has installed close to 70 MW of wind power projects across India and a 90 tonne-per-hour biomass fire boiler at a total investment of approximately ₹ 400 crore."

Marketing: Green marketing may refer to selling product or rendering services based on environmental benefit. Green Marketing begins with 'green design'. Most buyer decisions are influenced by the labelling, (green labelling) that states all that makes the product green compliant. Also, the price of green product has to be affordable for the customer to encourage purchase. Industrial differentiation works only when products reduce client's cost.

Most buyers are influenced by advertisement that reflects a company's commitment to environment. Companies that do green advertisement that tend to portray an image of environmental friendliness, influences their customer purchase decisions. Consumers love to associate themselves with companies that are environmental stewards. When a company communicates this through their advertisements, promotions, publicity and corporate social responsibilities, they are sure to get many loyal customers.

According to a study on perception of consumers towards Green FMCG Products, the following results stated in the graph were obtained. Thus inference of the study is clearly in favour of going green for the FMCG sector.

Figure 4.9: Awareness of green FMCG products



Source: <http://academia.edu>

Green marketing should not be considered as just one more approach to marketing, but has to be pursued with much greater vigour, as it has an environmental and social dimension to it. With the threat of global warming looming large, it is extremely important that green marketing becomes the norm rather than an exception or just a fad.

5 Role of NGOs - Be the Bridge

NGOs have, in particular, played an important role in raising environmental concerns, developing awareness of environmental issues and promoting sustainable development. The encouragement of public participation in environmental management through legislation in recent years has also enhanced the role of NGOs and Major Groups.

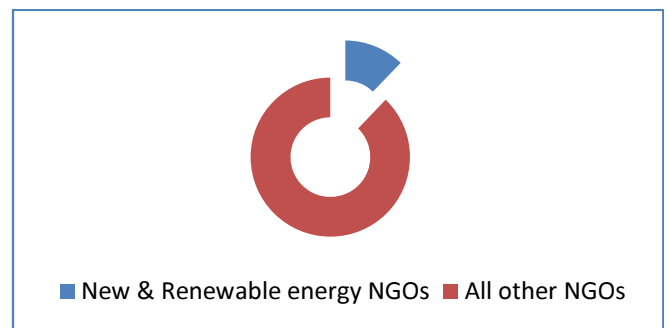
They now undertake a much wider range of activities than simply raising environmental awareness and/or acting as pressure groups. Their activities now include environmental monitoring; promoting environmental education, training and capacity-building; implementing demonstration projects; conducting advocacy work in partnership with the government; and the promotion of regional and international cooperation on environment.

5.1 NGOs Supporting Green Energy

As per the latest data (2.7.2013) out of a total of 49342 NGOs/VOs only 6034 NGOs/VOs are supporting the cause of Renewable energy.

"If the potential funds need to be channelized for sustainable development of the nation, NGOs need to evolve innovative ways to support the causes of CSR in a greener way."

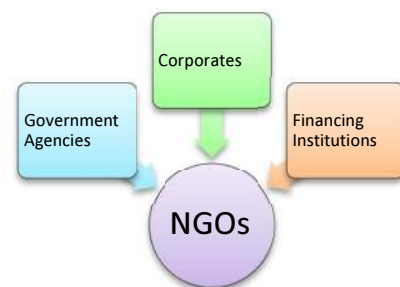
Figure 5.1: Share of NGO's Supporting Green Energy



Source: ngo.india.gov.in

As mentioned in the New Companies Bill 2012, it has provision of mandatory spending of 2% of the profits of the companies on Corporate Social Responsibility (CSR).

The procedure for this CSR spending makes the participation of NGOs vital. The New Companies Bill 2012 stipulates all CSR funds to be channelized through a registered NGO.



NGOs to act as the facilitator to achieve the goals of CSR

5.2 Role of NGOs

NGO describes a range of groups and organizations from watchdog activist groups and aid agencies to development and policy organizations. Usually defined as organizations that pursue a public interest agenda, rather than commercial interests.

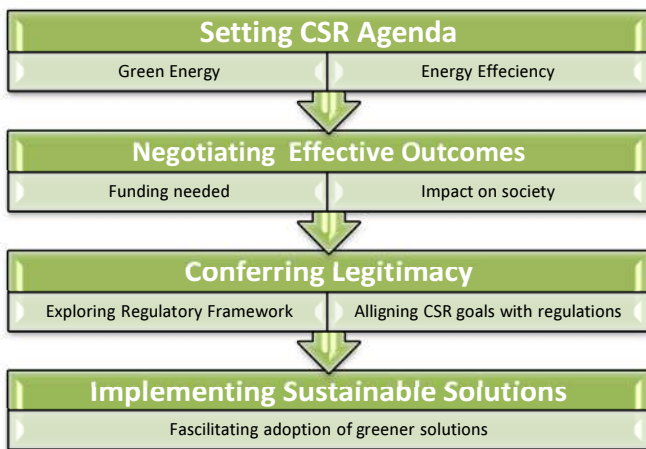
5.2.1 Traditional perceived roles



5.2.2 Going Forward in a Greener Way: Recommended Ways for NGOs

Going forward, to support the development of the nation in a sustainable way, the roles of NGOs need to be modified and be integrated with the aim of Green Energy CSR.

Figure 5.2: Recommended Ways for NGOs for Going Forward



5.3 Suggested Model for Sustainable Development



5.4 Green Energy CSR for Sustainable Development: Be Green in Every Aspect

1. Need to establish institutional framework/mechanism which will facilitate government agencies such as MNRE, MCA, DPE, IICA and Industry Associations: to align with corporate entities which will to define leadership role for NGOs/VOs
2. NGOs/VOs to enhance their skill and competency levels which include technical, financial and regulatory understanding.
3. Sensitization for microfinance and other financial institutions such as SIDBI; towards evolving role of NGOs
4. Ranking system/award to motivate the result oriented good practices of NGO's

6 Way Forward for Green Energy based CSR

- Build awareness among the CEOs and designated CSR Heads regarding best practices for Greener approach to achieving the proposed CSR target.
- Such sustainable approach should integrate renewable and energy efficiency based CSR interventions with other specified sub-sectors for CSR such as Education; Health; Rural Enterprise; Employment etc.
- Bringing together the CSR funds and funds from development partner agencies such as World Bank; UNDP, UNDIIO, ADB, JICA and others to make a substantial pool for green energy development for the society
- Government agencies like MNRE, BEE, EESL, MOCA, CERC, CEA, Renewable development agencies to provide regulatory framework for green CSR projects to make them viable technically and commercially.
- Adoption of international best practices and standards, and carry forward the on-going dialogue with agencies like GIZ to a fruitful conclusion.
- Joint effort of renewable energy development companies to provide required services to build green energy projects
- NGOs and VOs from all fields for operation should integrate green energy technologies in their agenda as solution to other verticals of CSR
- Need of investment not only in the projects for green power, but also in the R&D of new technology which are required for decentralized generation of quality green power

Figure 5.3: CSR Vertical: Need & Impact

CSR Vertical	Impact	Need
Better Education	Through E-classes, proper lit schools, evening schools for working elderly	Need Electricity
Better health	Hospitals and moving super specialty hospitals, use of solar cookers to avoid smoke, drinking water purifiers	Need Electricity
Employment	Generation of local employment to stop migrations, providing vocational training to make semi-skilled and skilled workforce	Renewable energy projects are labour intensive and can provide very good local employment opportunities
Socio-Economic Development	Better irrigation facility, drainage systems, street lighting, supply of power to households, developing small scale business in rural and semi-urban areas	Need Electricity: Off Grid Solutions
Environment sustainability	Save forest, reduce carbon foot print	Usage of green power

- Understanding the fact that in electronic age, growth and prosperity of society in a sustainable way is dependent on the source of energy we are using. The energy requirements should be fulfilled through green technologies for better future and sustainable growth of society.
- Green CSR will be the major driver for all the CSR activities as energy is the backbone of any activity in this electronic age.

Figure 6.1: Potential Green Energy NGOs



IPS estimates by adopting greener ways of CSR the existing 12% of Green Energy NGOs can be increased to as high as 70%



6.1 RECs – Another Potential Mechanism

- The REC model is flexible enough to give the option of investing any amount as low as INR 1500
- RECs can be brought from power exchanges (like IEX) and in a way the buyer of REC is supporting the developer based out in some remote area.
- Hence REC is a readily available hassle free medium of going green and supporting the nation’s sustainable development.

A new innovative idea is not required to find new things it can simply finding a way in the current system and utilize it for benefit of all.

Promotion of Voluntary REC Market:

- CERC and SERC should allow off-grid small scale renewable projects to be considered eligible for REC (should include 1 NGO, 1 corporate house under CSR and end users as stake holders). This will make micro – grids more viable and self-sustainable
- Promoting the voluntary REC market can provide the following social benefits to India
 - The renewable sector growth will be fuelled by the demand , which somewhat slowed down after failure of implementation of RPO
 - If REC as a market becomes mature, this will provide a new sustainable model to provide green power to people who need it most. The corporate can install renewable projects in rural areas

or where there is no availability of grid power at all or only for few hours a day as their CSR. The projects can be made sustainable by providing cheap power to the consumers and claiming RECs on it.

- Projects done under CSR should be exempted from paying all kinds of taxes (even on REC income). The profits from such projects should in turn be used for other 9 verticals of CSR.
- The REC mechanism already in place with few changes can be a game changer for both corporates willing to do CSR more effectively and also for the society
- Allowing corporates to buy REC directly from Re-Generators, who are supplying power to rural or under –privileged area at a subsidized rate. This will reduce the burden of government from subsidy and also attract more private investment in rural and un-electrified areas of country.

"Corporate social responsibility is a hard-edged business decision. Not because it is a nice thing to do or because people are forcing us to do it... because it is good for our business" - Niall Fitzgerald, Former CEO, Unilever

"A good company delivers excellent products and services, and a great company does all that and strives to make the world a better place." - William Ford Jr., Chairman, Ford Motor Co.

"The business of business should not be about money. It should be about responsibility. It should be about public good, not private greed" – Anita Roddick, Founder, Body Shop

Disclaimer: We endeavour to provide accurate and updated information; team IPS however does not guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. IPS endorses the analysis done on the data provided through public domain. However no one should act on the report alone without detailed analysis of the domain.

¹ NASSCOM, <http://www.nasscom.in>
² By Continuity and Resilience (CORE) organisation in 2010; Continuityandresilience.com
³ ECO3 project of BEE & USAID of 2009, <http://www.eco3.org/downloads/equivalentmatrix.pdf>
⁴ Technology Roadmap – Solar Photovoltaic Energy, International Energy Agency, 2010. <http://www.iea.org>.
⁵ http://mnre.gov.in/file-manager/UserFiles/subsidies_solar_thermal_systems_device_s.pdf.
⁶ <http://www.itu-apt.org/gtas11/robert.pdf>
⁷ http://dot.gov.in/sites/default/files/CSIII%20NLD%204%201%2012_0.pdf
⁸ <http://www.itu-apt.org/gtas11/robert.pdf>
⁹ ECO3 project of BEE & USAID of 2009.
¹⁰ "Growth of Indian building sector", 2010.
¹¹ Schneider ElectricTM
¹² MNRE, Government of India.

About INDIANPOWERSECTOR.COM

IPS is a young and dynamic organisation promoted by alumni of **National Power Training Institute (Ministry of Power)**. The website is maintained by the parent company **Power Plus Consultants**.

In its three years of operation since 2010, it has become India's premier knowledge portal for 360 degrees coverage of power sector. The portal provides free for all knowledge, also it reaches to the subscribers through daily newsletters.

The core expertise of the team of Power Managers lies in regulatory advisory and market analysis.

Services offered under the banner of **Power Plus Consultants** include

- **Renewable Market Analysis**
- **Renewable Project Development**
- **Regulatory Advisory**
- **Power Sector Analysis**
- **Energy Portfolio Management**
- **Market Intelligence**
- **Strategic Alliances**

Team IPS believes in educating and updating all the stake holders in the energy sector with the latest national and international news updates and market analysis.

In the continuous effort to promote and generate awareness about power sector IPS has multiple strategic alliances with national and international knowledge portals and associations.

Team IPS consists of young dynamic power managers and retired government officials as mentors to support the vision of IPS.

IPS plans to conduct workshops on solar awareness, Voluntary REC markets, and Off-Grid solutions in the future.

Re-Mark

IPS is associated to team RE-Mark for promoting the Green awareness amongst corporate and its consumers and bring RE-Change to the world.

RE-Mark is India's first RE label that communicates a company's dedication to renewable energy in a way that is simple and intuitive enough to guide consumer behavior.

About Sharp Developments

SD is a non-governmental development organisation registered (1993) under the Societies Registration Act 1860. For nearly two decades, SD has been a leading NGO working in the following areas-

- **Low Carbon Technologies**
- **Energy Efficiency**
- **Renewable Energy**
- **Energy and Environmental Management**
- **Rural Development**
- **Technology Transfer**
- **Capacity Building and Training**
- **Corporate Social Responsibility.**

SD is deeply committed to objectives of sustainable development in India and its organizational objectives are fully aligned to support Government of India's mandate to ensure equitable growth objectives balancing environmental and economic development. SD supports national objectives as laid out in the Five Year Plan document and is currently focused on various programs being undertaken by respective agencies and ministries such as the **Planning Commission; Ministry of Environment and Forests; Ministry on New and Renewable Energy; Ministry of Power; Ministry of Science & Technology; Ministry of Water Resources and various state governments.**

Equally focused are organizational objectives to support such sustainable growth through education; training and capacity building.

International Centre for Innovation, Learning and Development (ICfILD)

Corporate Social Responsibility (CSR) at SD is implemented through the **International Centre for Innovation, Learning and Development (ICfILD)**. Our multi-disciplinary team of advisors brings together global experience and best practices which help us recommend relevant CSR interventions.

We serve as a competent CSR advisory and partner to companies across all sectors. Our team specializes in creating and implementing sustainable CSR strategies that are aligned to evolving business needs and objectives of our clients.

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