

Sustainability and GHG Emissions: An Empirical Study of Strategies and Practices of Organizations in India

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Abstract: The purpose of this paper is to explore the consciousness and sustainability practices of organizations in India. The study significantly lays down sustainability practices of organizations in India across various industries. Within an industry top two firms having available sustainability practices were selected for research. The findings revealed organizations are aware of customers' focus towards sustainability issues. Manufacturing and mining industry are adopting sustainability practices having planned and structured approach and are continuously documented these in their annual reports/sustainability reports while few industries are at nodal stage of sustainability practices. Legislative measures with audits are required to ensure sustainability. This paper will be useful in identifying policies being followed by organizations, analyzing areas of improvement, Government sector to make new policies specially for environment and to any Indian industry in understanding and comparing its sustainability initiatives with its peer in that industry.

Key words: sustainability; GHG emissions; environmental strategy; climate change; global warming; India

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1. Introduction

In the context of Indian industries whether manufacturing, service, FMCG or any other industry the term "sustainability" has been a buzz word whether it has been a corporate image burnish tool or marketing tool to create differentiation. Now days every industry being customer centric and customer being proactive towards global issues related to sustainability, it has become of absolute importance to address and highlight an organization's role in sustainable development in the mind of its customers. Corporates have been able to differentiate their brands through a socially responsible promise and further it signifies their optimistic approach towards sustainable development. Such approach is sometime known as "green marketing". In 2000, the green

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marketing was 10-12 percent of United States consumers (Lawrence et al., 2005).

The Indian service sector particularly banking has come up with response to climate change and carbon emissions. The Reserve Bank of India in its notification for banks has emphasized sustainable development and non-financial reporting (Prasad, 2011). Most of the banks have measures for calculating carbon footprints and energy consumption. For example Union Bank of India has decided to have an annual audit focusing on electrical energy and has put up solar water heaters at various facilities maintained by them. The present day consumer and other stakeholders are environmentally conscious and are showing increased interest towards environmental issues (Anderson & Skjoett-Larsen, 2009).

India being an emerging market is now on limelight and has become a cost effective and quality focused destination, hence the global business community expects India to develop some environment friendly practices. Sustainable reporting practices are gaining focus in India and environmental performance and societal governance are being integrated with the traditional economic and financial reporting (Mitra, 2012).

Consumer preferences are shifting from grey products to green products and companies with green products will sustain longer in market and will be benefited by competitive advantage (Saxena & Khandelwal, 2010). The companies have been adopting an environment management practice which goes beyond compliance with regulation to have consumer delight (Schmidheiny, 1992; Smart, 1992). The research is made by using purposive sampling. Available secondary data was extensively used. The data has been collected from the official websites of the firms and published governments reports. The top firms are selected as reported by economic times for the year 2012. Out of the list top two firms in each industry having available sustainability practices were selected for research.

Today organizations are looking to take the advantage of their sustainable policies to earn a “sustainability rank” and surpassing the functional satisfaction level of customers by attracting more ecologically responsible customers which may turn out loyal customers and to go for niche marketing to exploit maximum benefits of differentiation which is one of the key to survive profitably in global competitive environment. It is for the first time that such an exhaustive study on sustainability policies and practices is carried out on Indian industries. This shows the need to undertake research on Strategies and Practices of Organizations with special reference to India and present study is an attempt to fill this gap.

1.1 Objectives

- (1) To observe the consciousness of Indian firms towards sustainability.
- (2) To explore sustainability practices of firms among seven industries that is manufacturing, mining, petrochemicals, retailing, telecommunications, food processing and banking.

1.2 Concept of Sustainability and GHG

The standard definition of sustainability as laid down by *Brundtland* thesis in 1987 introduces the de facto standard definition of sustainability: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

KPMG defines sustainability reporting as “Reports that include quantitative and qualitative information on their financial/economic/social/ethical and environmental performance in a balanced way”. Every practice of sustainability that brings out a change in traditional practices followed by the organization must bring the change the customer thinks and the organization wants. Both should go hand in hand. For example introduction of CFC free refrigerators in China in 1990s. In India green technologies are being followed in cement industry resulting in lesser carbon emissions and more efficient energy use (Schumaker & Sathaye, 1999). Indian consumers of hotel

services are aware about environment friendly practices and customers support such hotels that follow green practices. They suggested hotels to look for long term goals would have to invest in environment friendly practices and hotels following green practices have competitive advantage (Manaktola & Jauhari, 2007). So it is of utmost importance to analyze sustainability practices and their consequences in the mind of customers. For this organizations should keep on reporting their policies and practices of sustainability to their customers.

Moreover now it has been a part of regulatory framework. The Millennium Development Goals has laid down a clear commitment towards sustainable development. Some of the regulatory approaches include imposing of carbon tax on corporate for their contribution to global warming in Australia. In India a definite percentage of profit has to be contributed towards community development. In nutshell, Corporate have been put under legal framework as mentioned in Companies Act 1956 to spend definite percentage of their profit to environment stability and ultimately sustainable development. Very few Indian companies have been reporting on CSR and even few of them are having a planned and structured approach (Gautam & Singh, 2010).

2. Sustainability and Climate Change: Policy and Laws

India being a developing country it faces challenges relating to energy, climate change and sustainability. The pressure of more energy use the emissions are likely to increase over the time. India's approach has been of policy making rather than of legislation.

Tariff Policy (2006)—Under electricity act 2003 and National Tariff Policy 2006, the central as well as state electricity regulatory bodies must purchase a certain percentage of grid-based power from renewable sources.

National Action Plan on Climate Change (2008)—The plan lays down eight National Missions running until 2017 which includes Solar Energy efficiency, Sustainable habitats, Green India (REDD, LULUCF), water, Himalayan Ecosystems, Agriculture and Strategic knowledge of climate change.

Post-Copenhagen Domestic Actions (2010)—On 10 May 2010, India released its GHG emissions inventory for 2007. India has become the first “Non-Annex” country to publish such updated numbers.

National Electricity Plan (2012)—The fourth chapter deals with the initiatives and steps for GHG abatement and aims to keep CO₂ intensity declining.

India is Non Annex I country in Kyoto Protocol and hence no binding target for emission reduction. But India is an active participant in Clean Development Mechanism (CDM) established by protocol and has more than 889 registered CDM projects as of 10 September 2012. India has also announced an important policy, levy on coal, a clean energy cess on it @ Rs 50 (US\$1) per ton applicable to both domestic and imported coal and the fund will go to National Clean Energy Fund.

2.1 Current Status of Emissions

1994 and 2007 GHG Emissions—A comparison of the 1994 assessment is available in India's National communication to UNFCCC. The total GHG emissions without LULUCF have grown from 1251.95 million ton in 1994 to 1904.73 million ton of CO₂ equivalent in 2007 at compounded annual growth rate of 3.3 percent and with LULUCF the CAGR is 2.9 percent. Some of the industries indicated significant growths in GHG emissions for example cement production 6.0 percent, other energy (from petroleum refining, manufacturing of solid fuels, commercial and industrial sector, agriculture and fisheries, fugitive emissions from mining, transport and storage of coal, oil and natural gas) 1.9 percent and other industry (production of glass and ceramics, soda ash, ammonia, nitric acid, carbides, titanium dioxide, methanol, ethylene oxide, acrylonitrile, carbon black, caprolactam, ferro

alloys, aluminium, lead, zinc, copper, pulp and paper, food processing, textile, leather, mining and quarrying, non specific industries and use of lubricants and paraffin wax) 2.2 percent.

2.2 Sectoral Description

Petroleum Refining and Solid Fuel Manufacturing—These energy intensive industries emitted 33.85 tons of CO₂ equivalents in 2007.

Cement—The cement industry emitted 129.92 million tons of CO₂ which is 32 percent of the total CO₂ equivalent emissions from the industry sector (Cement, Iron and Steel, Other Industry).

Other Industry—comprises of Pulp/paper, leather, textiles, food processing, mining and quarrying and non specific industries comprising of rubber, plastic, watches, clocks, transport equipment, furniture etc together emitted 124.53 million tons.

3. Results and Discussions

3.1 Manufacturing Companies

3.1.1 UltraTech Cement

In their sustainability commitment the key focus areas include—conserving natural resources, energy and water management and emission reduction all of which are necessary towards sustainable development. UltraTech is a member of Cement Sustainability Initiative (CSI) of World Business Council for Sustainable Development (WBCSD) which is voluntary global initiative on climate protection, emission reduction and responsible use of fuels and raw materials.

- The commitment as a part of CSI the company aims at 3% carbon dioxide reduction over next 3 years.
- To conserve fossil fuels used as fuel the company is using alternate fuels from biomass and industrial waste.
- Use of renewable energy resources is also area of focus. In this regard a 100 KW photo voltaic cell based solar power plant is installed at Kotputli cement works with total of 400 KW.
- For reducing carbon footprint, the company has identified power generation potential by Waste Heat Recovery Systems (WHR) of 90 MW for all units.

The company also focusing on reducing water consumption and for this installation of bag house in kilns and air cooled condensers in thermal power plants are major steps. It is of about 9 million cubic meter per annum at present operational capacity through air cooled condensers in thermal power plants.

- Water bodies in catchment areas for rain water storage and aquifer recharging have been set up at selected places.
- Over 12 percent of water demand is met by recycling of waste water.
- Water bodies also help in biodiversity management.
- An afforestation programme has been initiated on 19.6 hectares of land at the Kovaya plant in Gujarat
- For the last two years, the company has been disposing over 69,000 tonnes of wastes successfully substituting around 1.15% of its fossil fuel requirement and thus saving around 0.1 million tones of CO₂ emission annually.
- Awards: The awards and recognition for the sustainability practices are enlisted below
- Subh Karan Sarawagi Environment Award 2010-2011
- Greentech Environment Excellence Gold Award 2010
- National Award for Prevention of Pollution 2009-2010

- Rajiv Gandhi Environment Award for Clean Technology 2009-2010

3.1.2 ACC Cement

The Company on the environmental front is committed to contain the direct and indirect emissions of Green House Gases (GHG) from its operations. The company has carried out a study on its carbon footprint and developed a carbon strategy. It has set both long and short term reduction targets, with a plan on all CO₂ emission reduction levels like clinker factor, specific thermal energy etc. In the last two decades the company has managed to cut down its carbon footprints by 31 percent to 550 kg of CO₂ per ton of cement today.

The organization is member of Cement Sustainability Initiative (CSI) of World Business Council for Sustainable Development (WBCSD) and as a member it focuses on alternate fuels and raw materials portfolio which includes biomass and industrial wastes. The company has separate council for implementation of its sustainability performance called Sustainable Development Council (SDC).

Eco friendly product: ACC has been trend setter in manufacturing of environment friendly cements such as Portland Slag cement. Blended cement as above consumes less energy leading to lower carbon footprint.

Organization seeks excellence in its environmental performance and the main thrust is in the following:

- Improving the clinker factor by promoting blended cement.
- Pursuing improvement in energy efficiency.
- Promoting clean green technologies and use of renewable energy.
- Promoting the use of alternative fuels and raw materials.
- Development of green belts.

Milestones in Sustainable Development: Below are awards listed:

2012 ACC awarded rating of “Sustainable Plus” in category Gold in CII’s first ever Corporate Sustainability Label program

2012 ACC is the only cement company in India to qualify in the Carbon Disclosure Leadership Index (CDLI) based on responses to the Carbon Disclosure Project

2011 4th Global Initiative for Restructuring Environment & Management (GIREM) Award for Company of the Year 2011

2010 Wind energy generated by wind farm launched by ACC in 2007 in Tamil Nadu became eligible to receive Verified Emission Reductions (VERs) which were traded in the European market.

3.2 Mining Companies

3.2.1 Coal India Limited

Vision: To emerge from the position of domestic leader to leading global player in the energy sector by adopting best practices from mine to market with due care to environmental and social sustenance.

Mission: The Mission of Coal India Limited is to Produce planned quantity of coal efficiently and economically in an Eco-friendly manner with due regard to Safety, Conservation & Quality.

The company in its sustainability efforts with respect to environment has been taking following measures:

- The company introduced state-of-the-art Satellite Surveillance to monitor land reclamation and restoration for all opencast projects.
- Coal India has made afforestation over an area of around 32,000 Hectares while the total forest area degraded due to mining operation is around 12,800 Hectares, which means, for every hectare of forest land degraded, CIL has made plantation in 2.5 Hectares of land.
- As a part of “Clean & Green” programme, massive plantation has been taken up by CIL wherever land is

available. CIL has till date planted over 73 million trees.

3.2.2 Sesa Goa

Mission: To continue to maintain our pre-eminent position in safety, environment and quality control management in the respective industry sectors.

Sustainability: The organization aims at not only to minimize damage to the environment from their projects but to make a net positive impact on the environment wherever they work.

Environment: At Sesa Goa environmental endeavors fall into two categories Resource Conservation and Prevention of Pollution. While At mines, the thrust areas of environment management are Mine Land Reclamation and Water Management, at manufacturing units it is control of dust and gaseous emissions.

Energy: The Company has been able to reduce our specific energy consumptions in each of their division by 11.15% in Mining as compared to the previous year. Continuous reduction in specific energy consumption is a focus area from an environmental as well as economic perspective.

Waste Management: It focuses on a “4R” waste strategy—Reduce, Recycle, Reuse and Reclaim and use recycled water for its mining operations and for beneficiating iron ore, thereby reducing about 70% of freshwater consumption.

In its commitment towards sustainability company has Separate documented policy for CSR, Biodiversity, energy and carbon, water management, social and HSEQ policy.

3.3 Petrochemicals Companies

3.3.1 Petronet LNG

The organization is expressing its commitment towards sustainability by its environmental activities which include:

- Installed 10 nos. Emergency solar lighting at prominent places in village Luvara, Dahej, Gujarat
- Construction and Commissioning of Drainage/storm water disposal pipeline of 1 meter diameter from village luvara, Dahej to approach to sea.
- Installation of drainage crossings to remove accumulated water at 4 locations within the village Luvara, Dahej.

Award: The Company got Environment Award 2011 from Greentech Foundation.

Environmental Sustainability: Planted mangrove which have enormous ecological and economic value to prevent soil erosion, enrich coastal water and contribute significantly to global carbon cycle. Greening Initiative—Plantation in village school and in & around Dahej Terminal.

3.3.2 Dhunseri Petrochem and Tea

Environment Management: It is the mission of the company to conserve, improve and protect natural resources and the environment. The company has always been committed to the highest environmental and safety standards which is reflected in complete compliance of such regulations.

- This commenced with the selection of advanced technology from Germany, marked by no emissions.
- Dhunseri created a dedicated Environmental Cell to review related activities.

The Company continuously monitored effluent treatment and water discharge. Investments were made in fields like rain water harvesting, plantation/greenery, vermi-compost pits and gasflaring systems.

- The Company also invested in the following energy conservation processes and equipment: Eco-friendly roof top extractor and modified control circuit for ventilation fans at Haldia plant. Eco-friendly ventilator fans installed in all tea factories for circulation of fresh air. These initiatives improved water and energy consumption efficiency

on the one hand and reduction of hazardous gases and waste on the other.

Certification: The Company was awarded ISO 14001 and BS OHSAS 18001 by M/S TUVNORD certification body.

3.4 Retailing Companies

3.4.1 Pantaloon Retail

Being a future group part inclusive growth and sustainability are at the core of their strategy and business practices.

Sustainability Environment: Future Group strives to reduce environmental impact and optimize energy consumption in its stores and strengthen green considerations in logistics operations.

Inclusive growth: The Company fulfils its responsibility for delivering high quality services in a sustainable and environmentally responsible manner by:

- Reducing the environmental impact of store construction and operations.
- Improving energy efficiency for important environmental benefits and reducing operating costs.
- Strengthening environmental considerations in the design of green products and packaging; developing green product lines that respect environmental concerns.
- Reinforcing environmental considerations in logistics.

Recognition: Indian Merchant Chambers and Asian Centre for Corporate Governance and Sustainability 2009.

3.4.2 Trent

A TATA subsidiary in its sustainability commitment is addressing the climate change by:

Carbon Mapping: A climate change policy has been articulated at the group level. This functions as a common framework for change and ensures that the changes taking place are institutionalized and implemented in more companies. The policy has been adopted by all Tata companies and importantly, every company has benefited from the deep commitment of its senior leadership.

Engagement and Awareness to Climate change: For this a total of 35,000 Tata managers have been exposed to the basic concepts of climate change and about 300 climate change ‘champions’ have been created to propagate the message across the group.

Climate change was incorporated as one of the areas of emphasis in the Tata Business Excellence Model (TBEM) assessment from 2010.

Strategic Collaboration: To gain experience on various issues related to climate change, collaboration and engagement is undertaken with institutes (such as IISC and IITB), forward-thinking companies and global organizations (such as UNEP/UN Global Compact Caring for Climate Initiative).

Tata index for sustainability: The index provides guidelines for Tata companies looking to fulfill their social responsibilities, and is built around the Tata Business Excellence Model, an open-ended framework that drives business excellence in Tata companies. The index is actually a set of guidelines for Tata companies looking to fulfill their social responsibilities, and it is the third set of such guidelines fashioned by TCCI.

3.5 Service Companies: Telecommunications

3.5.1 Bharti Airtel

In addition to addressing social challenges through their section “Our blueprint for social inclusion”, the company has also detailed other social and environmental aspects through “Our impact on the value chain”.

It has driven its green initiatives by making a determined move towards renewable energy sources like solar and wind to power its tower networks. The globally recognized P7 Green Towers project of Bharti Infratel allows

for 24,000 tower sites to run on renewable energy, with an expected reduction in GHG emissions by around 150,000 mt CO₂ per year. Its green initiatives have resulted in a reduction of 11% in GHG emission/terabyte for its operations in India during the year 2011-2012.

- Embedding sustainability has consciously evolved through a systemic engagement with stakeholders, i.e., Employees, Customers, Suppliers, Business partners, the Community, Investors and Regulatory bodies.

Creating Environment Friendly Buildings: This endeavor resulted in the setting up of six “One Airtel” campuses developed on Efficient HVAC design, building insulation, provision of daylight harvesting and robust Building Management Systems (BMS) controls.

The new campus of Airtel in Lucknow is a standalone “built to suit” state-of-the-art building, designed to specific needs. The building has been registered for green building certification under LEED, New Construction, from CII-India Green Building Council, Hyderabad. Airtel’s Lucknow campus will be the first GOLD-rated LEED building in Lucknow and the first LEED certified building of Airtel.

3.5.2 Idea Cellular

The company has clear focus towards sustainability and in its efforts towards these following initiatives has been undertaken:

Idea’s Sustainability Initiatives: Idea has and continues to adopt policies, and business strategies to effectively integrate emerging environmental, social and economic considerations.

- Globally the telecom industry is cognizant of the fact that it needs to lighten its carbon footprint and in the Indian telecom sector, Idea is leading the search for green energy options.

- Efficient power management, infrastructure sharing, use of eco-friendly renewable energy sources, leveraging the latest in technology to reach out to a large audience in most energy efficient manner such as video and teleconferencing, smart logistics, etc. are some of the best practices in our network infrastructure and day-to-day business operations, to ensure a clean and green environment.

Network Infrastructure Initiatives: In their effort to give back to the environment and reduce the collective carbon foot print of the telecom sector in India, Idea pioneered the concept of “Shared Telecom Infrastructure” services, along with a few other industry leaders in the wireless space. It aims at optimization of future tower rollouts; and enhanced operational efficiencies leading to a substantial reduction of carbon impact.

The Indian telecom industry’s first collaborative, cross-industry consortium to encourage the development of environmentally sustainable mobile networks was also led by Idea, and supported by the GSMA. The pilot, aimed at developing biofuels as a source of power for wireless networks in rural India which are located beyond the reach of the national electricity grid, was conducted in parts of Andhra Pradesh and Maharashtra.

Employee based Initiatives: Idea’s HR operations have all been enabled online for it’s over 7,000 employees, to ensure that there is minimal paper documentation. This has again helped us save tones of paper that would have been used in day-to-day HR related transactions and communication.

Communication Initiatives: It was Idea which germinated the thought of “Use Mobile, Save Paper” in the minds of millions of mobile users in India, with its aggressive yet thought provoking campaign. Idea designed the campaign to highlight numerous ways of saving paper, and thereby saving the green cover necessary for the health of the planet, by using a range of mobile based value added services in day to day activities to replace paper.

3.6 Food Processing Companies

3.6.1 Nestle

Company’s ambition is to produce tasty and nutritious food and beverages that also have the lowest

environmental footprint, so it strive to continuously improve its operational efficiency and environmental performance.

Company has developed a series of environmental performance indicators (EPIs) in 1997 to monitor their efforts for the sustainable use of natural resources in manufacturing. All processes follow the Nestlé Environmental Management System, and their business practices comply with government policies, environmental laws and regulation.

Key Initiatives to Ensure Sustainable, Environmentally Friendly Operations are:

- Continuous upgrading of energy and water management practices
- Reduced water usage in manufacturing
- Ensuring the absence of pollutants by focusing on zero waste discharge
- Treating and recycling waste water within the factory
- Using treated waste water to develop a 'green' environment within our factories
- CO₂ emissions per ton of product have been significantly reduced by 69.9%, while also reducing air acidification potential.
- Replacing R12/R22 with environment friendly refrigerants

3.6.2 Britannia

The organization's commitment towards sustainability has been focused environment and safety and has applied environment friendly ways as follows:

Environment and Safety: Below are the listed polices taken by Britannia.

- The use of environment friendly fuels like propane, LPG, PNG and biomass for baking purposes has been extended wherever such fuels are available. Creation of multi-fuel flexibility has led to a significant shift towards use of cleaner fuels and more such opportunities will be harnessed in future. Additionally, a pilot test is in progress to use polymer fuel made from recycled plastic.
- In the spirit of reducing waste and encouraging recycling, a wet waste composting facility has been set up at the Bangalore Office, in collaboration with a local NGO and a Waste Management System has been implemented that fully recycles both the dry and wet waste.
- Company believes that the best way to be socially responsible on a sustainable basis is to embed that into its business model. It, therefore, approaches CSR as Corporate Sustainable Responsibility and is focusing on 2 areas—food based solutions to increasing nutrition and energy conservation, which includes waste management.

3.7 Banking Companies

3.7.1 SBI

Company believe that it owe a solemn duty to the less fortunate and underprivileged members of the society to make a sustainable social change in their development.

Their focus areas are listed below:

- Environment protection—On Environment Protection Rs. 0.67 crores was spent.
- Clean Energy.

Green Banking: These are the practices adopted by the company listed below.

- The company effectively propagates and implements sustainable usage of resources including renewable energy.
- Adopted energy efficient measures.
- Bank is the largest deployer of solar ATMs in the World resulting in saving more than 2000 tons of CO₂ per year.

- Paperless Banking transaction—Green Channel Banking.
- The Bank has installed windmills with capacity of 15 MW in three states for internal energy needs.
- The Bank extends project loans on concessionary interest rates to encourage customers to reduce Green House gases by adopting efficient manufacturing practices.

Awards: State Bank wins Golden Peacock Award for Corporate Social Responsibility-2012.

3.7.2 ICICI

Green Initiatives: At ICICI these initiatives range from offerings/incentives, Green engagement to Green communication to our customers.

Green Products & Services: These are the initiatives taken for customers listed below.

- “Instabanking”—it is the platform that brings together all p\our alternate channels under one umbrella and gives customers the convenience of banking anytime anywhere through Internet banking, i-Mobile banking, IVR Banking. This reduces the carbon footprint of the customers by ensuring they do not have to resort to physical statements to travel to their branches.

- Vehicle Finance—As an initiative towards more environment friendly way of life, the company provides Auto loans offers on 50% waiver on processing fee on car models which uses alternate mode of energy. The models identifies for the purpose bare, Maruti’s LPG version of Maruti 800, Omni and Versa, Hyundai’s Santro Eco, Civic Hybrid of Honda, Reva electric cars, Tata Indica CNG and Mahindra Logan CNG versions.

- Home Finance-ICICI Home Finance offers reduced processing fees to customers who purchase homes in “Leadership in Energy and Environment Design” (LEED) certified buildings.

Green Engagements: In line with the “Go Green” commitment, ICICI Bank has partnered the Green themed CNBC—Overdrive Auto Awards this year.

- “Earth Hour”—In furtherance of its “Green” commitment, ICICI Bank pledged its support to the world’s largest global climate change event—the “Earth Hour”.

Green Communication: ICICI Bank has extensively capitalized on the existing internal media-statement, interties, and Credit Card Charge slips- to reach out to the customers and seek their collaboration in the “Go Green” movement. The communication on Online Bill pay, Online Funds Transfer and Subscribing to e-statements are aimed at migrating customers to “peerless” and “continue-free” mode of conducting some of their banking transactions.

In the light of above at the organization level manufacturing industry is having a comprehensive approach for its sustainability policies and activities. This particular segment is having more sustainability efforts with respect to environmental, GHG emission reduction, energy and water conservation and waste management. The mining industry too has been conscious for socio economic and environmental sustainability practicing land reclamation and afforestation activities and has separate environment, safety and CSR policies and time bound plans to carry on sustainability initiatives on continuous basis. In the petrochemical industry there are few initiatives towards sustainability but still there is lack of structured and planned approach towards sustainability on environmental front. This particular segment needs more planned policy formulation for having structured approach at the industry level for the firms to adopt sustainability activities. The retailing industry has also tremendous scope for formulating sustainability issues and policies for it. Very few initiatives have been undertaken by the industry at the organization level to benchmark any practices or to create competition among firms for such issues. The telecommunication industry has started giving importance to sustainability practices and is on a nodal stage. With latest technological advancements industry is analyzing the avenues at organization level through which it can contribute towards environmental issues. The food processing industry has focused on sustainability with

reference to environmental and waste management aspects, adopting newer practices to lower GHG emissions. Banking industry has been committed and is continuously coming up with innovative ideas and ways to move for sustainability. At organizational level infrastructure and service providing methods are becoming environment friendly and socio economic up gradation activities are there. At organizational level industry is coming up with new ways to promote sustainability on long term basis.

Being a part of developing country organizations in India have huge challenges to cope up when it comes to sustainability, climate change or energy challenge. Organizations in manufacturing and mining industry are continuously giving benchmarks and also are giving competition to firms in the respective industry in moving sustainable way. Having clear cut emission reduction targets, developing alternate raw materials, usage of waste material and minimum discharge policies have put them on global front among developing countries. In future theses can focus on increasing percentage of using alternate raw material and waste product usage, use of renewable energy consumption. Petrochemical, retailing and food processing industry lacks planned approach which can create sustainable avenues on continuous basis. Though some initiatives in this regard are present but policy formulation, future goals and targets are not there to measure and benchmark such initiatives. Under such a scenario the organizational commitment level towards it goes to dilemma and even future directions are affected. There is utmost need of stringent laws in these three industries to have some regulatory control on firms so that continuous sustainability efforts can be ensured on long term basis. When it comes to telecommunication industry, it has become conscious towards sustainability on environmental front and energy aspect and is using renewable energy options and opting for environment friendly ways in buildings and in providing services to customers. Such initiatives will be handy at organizational level to carry on sustainability efforts on long term basis. In future setting and adoption of industry benchmarks on use of renewable energy in tower networks, minimum paper work in HR related transactions and documentation can significantly cover the environmental sustainability in this industry. Organizations in the banking industry in the past have not been much concerned on environment or sustainability issues in India but at present this particular industry is showing great commitment in its working both in to go for and to promote sustainability initiatives like green banking solar ATMs, mobile banking are few to name. Even credit facilities/schemes are in practice to promote safer and environment sustainable growth. In future this segment can be major factor towards sustainable growth by devising credit facilities focused on sustainable responsible initiatives/commitments in credit schemes for all kind of industries.

3.8 Studies on Future Directions

The present study has certain limitations which can be the foundation for future studies. Firstly, there are very few studies on sustainability measures in India. More studies should concentrate on measures to help Indian organizations in addressing global climate change and GHG emission issues. Studies can also focus on the impact of government policies and legislation on public and private sectors over sustainability and emission of greenhouse gases so that a collective action can be ensured by all industries towards sustainability. More industries and more firms per industry could be taken for analyzing sustainability practices.

4. Conclusion

Now a day's organizations are very much conscious about their carbon emissions, the impact of their working practices on climate change and the sustainability issues. The sustainability mantra has been part of business agenda. Organizations are engaging in sustainability practices through various ways whether it is use of alternate raw

material for emission reduction or use of alternate fuels for lesser stress on environment or use of environment friendly fuels in their processes. Firms are enlisting their sustainability practices in their annual/sustainability reports. India's approach has been more of a policy rather than legislation. Most firms are having planned methodology and dedicated separate people to look after sustainability practices while few are at nodal stage. In service industries like telecommunication and banking organizations are well aware that customers are becoming more aware and conscious towards sustainability issues and prefer organizations with sustainability practices and hence have incorporated use of renewable energy resources and special offer for customers for adopting sustainable measures for rendering some of the services, yet the study reveals few firms lack structured and planned approach towards their sustainability commitment. Lack of stringent rules for implementing sustainability measures and energy needs being a developing country may also be factors for less sustainability in Indian enterprises.

5. Recommendations

Legislative measures should be adopted by government to ensure sustainable development of organizations and sustainability audits should be initiated to ensure compliance. Similarly financial subsidies and tax cuts may be provided by the government to encourage and strengthen organizations engaged in sustainability activities. More over structured and planned approach should be set and ensured by each industry for efficient sustainable practices by framing industry- wise norms to ensure sustainable development, giving sustainable ranking as it will motivate all the firms to participate in sustainability issues. More industries and more firms per industry could be taken for analyzing sustainability practices.

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