

ENVIRONMENT – QUALITY BASED MODELS FOR GREEN INITIATIVES

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ABSTRACT:

Indian Economy has been mounting at fast pace resulting in rapid increase of industries in all major sectors. This growth is essential for diversified life styles and standards of people. Due to constant raise in industries and the economic supremacy of the people, the demand for power, infrastructure, goods / products and services is also increasing at fast rates necessitating expanding the existing amenities as well as installing many new ones. The rapid proliferation of industries resulted in air, water and environment pollution leading to environmental damage and health hazards apart from depleting scarce natural resources. It is believed that more than 98.99 percent of Indian population breathes unhealthy air reducing life expectancy by 3 years apart from loss of millions of man hours due to health problems. Water from most of the rivers has become undrinkable. Ground water tables have been going down and surface water has become contaminated in the vicinity of industries. The fossil resources like coal and oil will get exhausted by 2050 making India fully dependent on various other countries for its energy needs. These problems are likely to increase further with further demand of products through which more industries will be come into operation due to the increased demands. Therefore, there is a need to maintain a proper balance between financial growth and environmental protection as has been done in most of the developed countries. The developed countries took green initiatives as early as 1996 and most of them obtained ISO-14001 certification as the first step towards environmental protection. Subsequently, not only there was increase in the number of these companies but also these companies adopted higher levels of green initiatives by investing in many environmental management systems. Many of these companies have even generated financial profits through investments in green initiatives. On the other hand, the scenario in India has been totally different. Till 2001, hardly any effort was made towards environmental protection. The implementation of environmental laws in India is ineffective and the financial strength of most of the companies is either moderate or weak due to which companies have been very indeterminate to invest on various green initiatives. Most importantly, there has been not enough research to support that investments in green initiatives can be financially beneficial for companies in India also. Most of the research work done in India had been concentrating on specific areas and does not cover major sectors in totality. Also, the available researches have not brought out the factors which are responsible for the low adoption of green initiatives in India. The acceptance of green initiatives is linked with the financial strengths of the companies, it is necessary to study the effect of financial suggestions on the green initiatives that are being taken by various green certified companies in India.

Key words: Green Initiatives, Environmental Management, Green production, Environmental Laws, Financial strengths and implications

Introduction:

Present Economic and Environmental Scenario in India: Currently the Indian economy has become the second fastest growing economy in the World resulting in the rapid development of large number of **industrial sectors**, prominent among which were automobile, cement, oil and petroleum, chemical and textiles, electronics, power, manufacturing and especially in Information Technology Sector and service. This economic and industrial growth has been considered the must for any country especially in India to fulfil the very basic needs of people. Taking this growth rate and economic development and competitiveness towards achieving its economic goals, industries have consumed a very large amounts of natural resources resulting in their faster exhaustion. During this process industries are also been seen emitting excessive toxic gases polluting the environment thereby affecting the health and hygiene of the people. Huge amount of solid waste and Toxic liquid wastes are being discharged into rivers, seas and canals polluting the natural resources very rapidly. Though industries are helping the countries economic growth, it is also adversely affecting the environment in a very faster way. Obviously, industrial growth has been adversely affecting the environment. Environmentalist like “Center for Science and Environment”, “National Green Tribunal”, and Energy Policy Institute, Chicago have conducted various studies on quality of air in India and have concluded that more than 99.5% of Indian population inhales air that is unfit for humans, which has already led to the reduction of life span by 3 years. This was due to the enormous amount of toxic gases that gets emitted through automobiles, burning of industrial waste, and e waste, also other industries like cement manufacturing and stone crushing industries.

Apart from industries releasing contaminated gases to the air, industries like Chemical, Dye making industries, Textile, soap manufacturing industry and oil and petroleum industry has caused serious problem through polluting our rivers and canals, and are now currently emptying their toxic effluents to the sea. Most of the industries have been discharging their untreated wastes directly into rivers and canals due to which river water in most of them has become unusable. Rivers like Yamuna had been declared dead, Ganga was almost in the verge of getting polluted through dumping half-baked dead bodies into the river, millions of rupees were spent on purification of sacred river Ganga without any success. These sources were almost a life source for many people staying on the basin of this river. Thousands and thousands of people have got infected by having skin diseases and serious water bound diseases through drinking this river water. This has led to down size in water tables, which has become very alarming and the surface water has become contaminated due to discharge of industrial waste and effluents. The water levels of all sources like, well, ground water has drastically reduced. The water bodies have almost eradicated due to algae formation on it. Water oxygen for aquatic animals are facing a major problem. The Portable water has become scarce with the water availability reducing from 2300 cubic meters to 1550 cubic meters during the last 15 years.

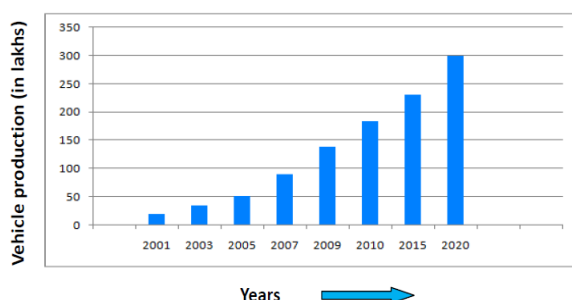
Due the constant demand of the industrial growth, Fossil resources like coal and oil has been consumed at a very high rate. According to the Planning commission it is been reported for the year 2012 – 2017 that with this rate of consumption of natural resources like coal and oil by the industry will lead to the resource

exhaustion by 2050, through which will lead India will have no other option but to import the required resources at exorbitant costs. Hence it is understood that Industrial growth is a major approach to the rapid reduction of natural resources, which leads to the imports at higher costs. The serious effects on the health of population due to degradation in air and water results in increased sickness among people leading to their higher medical expenses and greater loss of man hours. Needless to point out that these problems would increase exponentially along with the industrial growth. The Indian financial condition has been growing at approximately 5-6% per annum which would result in the growth of various industrial sectors also leading to further degradation of the environment. Therefore, it has been considered essential to find out the growth of major industrial sectors in the next 20 years and their likely impact or effect on the environment.

Growth of Major Indian Industrial Sectors: The eight Indian industrial sectors causing major pollution to the environment have been identified as automobile, power, cement, chemical & textiles, Oil & petroleum, electronics, manufacturing and service (CSE, 2009). These sectors not only consume large quantities of raw material and natural resources but also emit exorbitant levels of solid, liquid and gaseous discharges polluting the environment. These sectors at exponential rates in the next 20 years to meet the economic goals. The growth of these sectors in the next 20 years would result in enormous resource consumption leading to depletion of natural resources as well as increasing their adverse effect on the environment. Therefore, it would be necessary to analyse the adverse effects of the estimated growth of these sectors on environment to find out the measures required to be taken to maintain the balance between economic goals and environmental protection objectives. Automobile industry in India is the largest producer of two wheelers and second largest producer of three wheelers in the world. India has also stood in tenth place in manufacturing passenger cars, and stood fourth in tractor production and graded 5th position in producing commercial vehicles compared to the entire world. In the year 2017, 375 million vehicles have been registered in India alone. India has adopted to Make in India policy through which other countries are making their destination choice for manufacturing automobiles and automotive parts in Asia rather compared to the other parts of the world. India is growing faster as compared to the previous years through which investors have invested around 475 million dollars, making 10 – 12 % share in the GDP through providing employment to around 47 million people. Due to increase in vehicles every day or say every year approximately rated at 1.5 to 2.5 million vehicles being added every year, the Indian roads are literally becoming congested, which is leading to lesser travel time and vehicles avoidable fuels at traffic

lights and jams. Vehicles emit minute particles which to into the human being blood stream causing diseases like cancer. It is estimated that the vehicular emissions are rated to 64% of the total population. The major factor for environmental pollution in cities and towns is the old Diesel vehicles being still in use by the Government employees. Indian government is struggling had to bring

Fig 1.1 Estimated Growth of Automobile Industry 2001-2020



out effective legislation to control the air pollution caused by vehicles. We can see from the graph the rapid increase of vehicles in India (All types) which is leading to the air pollution.

Power Sector: Power sector has been the backbone and most important driver of Indian economy but also the most emission intensive and major polluter of the environment. The gross power generation during 2016-17 was 1200 Terra Watt Hours (TWH) which has been estimated to increase to 1751 TWH by 2020-21 and to 3225 TWH by 2030-31. The Indian power generation has been predominately based on coal-based plants (69%), having poor efficiencies (30.1%) and high exhaust emissions of 1.1Kg/kWh (Green Rating Project CSE, 2009).

Increase of power requirements would have following adverse effects on the environment: i) More and more thermal power plants would be installed in the country (because of their cost competitiveness) resulting in exponential increase in the consumption of coal. India meets more than 60% of its coal requirements through imports, which leads to drastic increase in consumption of coal would drastically reduce our coal reserves, which would last only until 2050. According to the statistics the CO₂ exhaust emissions from thermal plants would increase by four times (from 570 million metric tons (mMT) in 2008-09 to 1935 mMT in 2030-31) causing extensive gaseous pollution and posing serious health problems. More than 55% of the plants have been violating air pollution standards (CSE, 2014). The cost of reducing each tone of CO₂ emission has been \$ 60 which has been three times the sale price of carbon credits. The various Thermal Power Plants in India have been consuming 35 billion cubic meters of water which equals half of India's total domestic need. There would be sharp increase in the number of wagons and trucks to convey coal from mines to the thermal plants resulting in increase in petrol and diesel consumption as well as gaseous exhaust further polluting the environment.

Electronics Sector: The fast phase of growth of electronics products coupled with their short life cycle has made this sector as the fastest growing source of radioactive waste materials. The latest trend in India has been of buying new products at very fast rates and discarding the old TVs, computers, laptops, MP3 players and mobiles phones giving rise to huge quantity of E-wastes. As per the survey of Central Pollution Control Board (CPCB), 1.347 lakh Metric Tonne of E-waste was generated in India during 2005 which was expected to increase to 20.0 lakh MT by 2025. This huge amount of radioactive E-waste poses a serious threat to our environment as well as to the health of general public. Apart from generation of E-wastes, the electronic products were being assembled in Small Scale Industries (SSIs) in large clusters and the existing government policies have not been successful to exercise effective control over them. Considering the serious threat posed by e-wastes, electronics sector has been included in this research.

Global Warming: The average temperatures in India is constantly increasing day by day and the current statistics shows that there is a temperature change of more than 5 degrees since 1993 every year has been creating a record of maximum temperature. Cities like **Bangalore** and **Pune** which were known to be very pleasant have been using air conditioners for the last 15 years. Even the hill stations which were cold during summers have also installed air conditioners. Very shortly, we would come across situations where

every city in India would be using air conditioners for major part of the year resulting in increased requirement of power as well as emission of large quantities of GHG further polluting our environment.

Need for Green Initiatives: The above facts have brought out the need to maintain a balance between industry growth and environmental management failing which India would be left with no breathable air, safe drinking water as well as other natural resources after few years. Without natural resources and with sick people, the aim of India economy to sustain a growth rate of 5-6% would be impossible to attain. Indian industry, which has been concentrating on economic gains, needs to maintain proper balance between the economic and environmental objectives and adopt green initiatives at the earliest. Present Status of Green Initiatives Adopted by Companies in India Companies in the developed world recognized the need to protect the environment while undertaking industrial activities as early as 1996. The first organized step taken by majority of them was to obtain ISO-14001 certification and adhere to the laid down environmental laws. Within five years of the of the ISO-14001 coming into existence, there had been very rapid growth of ISO-14001 certified companies in the world led by Japan, China, USA and the European countries and from a number of 36765 in 2001, their number grew to around 2,00,000 by 2010. On the other hand, companies in India failed to appreciate the need for maintaining balance between economic aims and environmental protection. Till 2001, there were negligible companies with ISO-14001 certification. This number became 138 in 2001 (0.03%) and till 2010 only 3000 or 0.3% companies had obtained this certification indicating extremely low environmental awareness among Indian companies. The above data brings out the fact that companies in India have not been environmental conscious and have not fulfilling their basic obligations towards environmental protection. Their main concern had been towards achieving desired economic growths without any concerns towards environmental protection and consumption of scarce natural resources. This would ultimately result in serious health hazards, non-availability of drinking water and natural resources leading to sudden decrease in the economic growths.

Need for Research in India: The Indian industrial sector has been concentrating on growth using the limited natural resources at considerable pace. However, it has now become obvious that it would not be possible to sustain this growth rate once our natural resources get depleted and industry is forced to import them at high costs. Indian industry would find it difficult to compete with others and the rising growth curve might become inverted “U” leading to economic down turn. This would result in huge dead inventories with the industry forcing companies to lay off people causing misery and poverty. Also due to environmental degradation, majority of population would be sick and unhealthy. These effects had been understood by developing countries as early as 1996 and they started taking green initiatives by obtaining ISO-14001 certification as the first step. Subsequent researches in developed countries established that adoption of green initiatives also results in financial savings to the companies. This finding motivated companies to increase their levels of green initiatives. However, companies in India have not understood the importance of maintaining judicious balance between economic growth and environmental initiatives. As of now only 0.3% of industries have adopted some sort of environmental management system by obtaining ISO-14001 certification. No research has been conducted to find out the reasons for low

environmental awareness among companies in India. Also, no research exists to indicate that adoption of green initiatives results in financial savings in the Indian environment also.

Literature Review: Companies in the developed World recognized the need to shield the environment through protecting while undertaking industrial activities. The first organized step taken by them was to obtain ISO-14001 certification and adhere to the laid down environmental laws. Within five years of the of the ISO-14001 coming into existence, there had been very rapid growth of ISO-14001 certified companies in the world led by Japan 10%, China-9% and European countries 6-7% (Reinhard Peglau, 2007;Boiral, 2011). Talking On the other side, the growth rate of the companies which are certified as ISO-14001 companies in India during the said period was extremely low. During 2001, there were 4, 00, 000 registered companies out of which only 138 had obtained ISO-14001 certification (CPCB Report). By 2010, total number of companies registered in India grew to 10, 00,000, out of which only 3000 or 0.3% had obtained ISO-14001 certification which indicated that the companies were being started without the knowledge of environmental awareness. According to the statistics, the growth rate of ISO-14001 certified companies in India are very slow in implementing the environmental protection practices. **Outline of this Literature Review** has been followed on the basis of; Low Initiatives by companies in India, Factors/ Drivers of Green Initiatives, Identification of green Initiatives. Financial Implications of Initiatives, Research/Initiatives in Developed World, Research/Initiatives in India, Identification of Gaps, Identification of Gaps. According to Institutional theory a company is forced to adopt green initiatives due to three pressures experienced by it: namely the normative pressure, the coercive pressure and the mimetic pressure. Firms face increasing pressures from non-profit organizations, government agencies and shareholders. The internal stake holders were directly engaged in the economic activities of the organization and consisted of the owners, the business partners, the shareholders and the employees. The external shareholders had no direct control over the economic activities of the organization and consist of customers, suppliers, dealers and other Government agencies and local communities. The investors and the shareholders of the company, not being connected with the day to day activities of the organization, would have profits and earnings per share as their main area of concern and under normal circumstances would not put high pressure on the management. However, they constitute a strong force and in case of threat to their investments due to environmental violations, can put high pressure on the management to adopt green initiatives for the employees, their salaries and bonus carry higher importance and their concern for green initiatives would depend to a large extent on the nature of operation of the firm and the employees' maturity level regarding the effect of firm's business on environment. In a mature society, the employee pressure on the firm to adopt green initiatives would be high as they would be fully aware of the consequences of firm's activities. And the other factors were Customer pressure, Business Partner Pressure, Coercive Pressures, Environmental Laws, Pressure from NGO's and local community, Mimetic Pressure, pressure on Corporate Social Responsibility. Improvement of environmental performance can happen through emission of hot gases. The major source of pollution from industry has been the emission of hot exhaust gases. These exhaust gases being toxic have carbon soot which are detrimental to the health of the people living in the vicinity. Hot emitted gases being easily noticeable attract immediate penalties.

Companies extract energy of these hot gases by using heat exchangers. In many cases, the cooled gases are liquefied which totally reduce emission of gases into the environment. These initiatives help companies to accrue financial gains as well as to improve company's environmental performance. Reduced Solid and Liquid Discharge, produced during the production process have been a major source of environmental pollution. These being visible attract heavy penalties. The dyes, chemicals, paints, fly-ash, radioactive electronic components, waste oils and greases etc constitute a large amount wastes which effects the environment. The chemical and textile plants put their untreated discharge in the rivers and canals which make rivers polluted and their water unusable. Efficient product designing reduces wastages in raw materials. Improved production techniques ensure minimum rejection of produced goods. Incorporation of treatment plants recycles waste oils and paints. Such green initiatives significantly reduce production of solid and liquid wastes and improve company's environmental performance Increased Environmental Compliance Initiatives taken by a company in reducing exhaust gases, solid and liquid waste as well as obtaining ISO-14001 certifications build a very positive image in the eyes of regulators and the customers. The inspection agencies once satisfied do not visit the organization very often reducing unnecessary trouble as well as the penalties. ISO-14001 certification works as the stepping stone towards reduction of visits of inspection agencies, especially in places where, the regulatory staff is inadequate and law enforcement weak (like in India). The regulators would then first visit environment un-friendly companies. Adoption of EMS leads to increased relations with regulators, mainly for organizations that had difficulty achieving compliance in the past. Identification of Green Initiatives Companies in different geographical locations world have taken various initiatives to ensure environmental protection while pursuing their economic goals. A study has been carried out on these initiatives taken by companies in different countries to prepare a comprehensive list of common initiatives for our research. The study conducted on various large manufacturing units in Philippines, Indonesia, Malaysia and Singapore has brought out various initiatives taken by different companies; reduction in the emission of toxic gasses through optimization of production processes, substitution of hazardous material with environment friendly materials.

Production processes have been modified to reduce generation of solid wastes. Rejections produced during productions were recycled in plants to reduce wastages. Alternate sources of energy like solar and wind have been installed in place of conventional polluting thermal power plants. Low consumption LEDs, CFL etc have replaced the high wattage tube lights. Wastes produced by some companies? have been used by others as raw material. Transportation of goods and raw materials has been done using green methods like rail and sea mode instead of road to reduce air pollution. Reusable packing material has been introduced.

From the above study reports, the important initiatives being adopted in general by majority of the companies in different parts of the world have been identified as follows: Reduction in usage of raw material, Reduction in the emission of toxic gasses, Reduction in solid/ liquid waste, Optimization of production processes, Installation of waste treatment plants, Modification of existing plants for waste reduction, R& D for new product development, Substitution of hazardous substances (SoHS), Repair, reuse and recycling of materials, Reduction in air, water and energy consumption, Supplying waste to others as

input, Use of alternate/renewable sources of energy, Locating suppliers closer to production facilities, Green transportation using rail and sea mode, Incentives to customers to return products after end of life cycle, Restoration of damage caused to land and water, Incorporating changes in policies and procedures, Training of employees, Training of suppliers and dealers, Increased maintenance on new equipment, Hiring of ISO consultants

Research Methodology: the initial phase of research it became evident that vast differences exist between what the companies report and exactly what they do in terms of green initiatives. It was also clear that getting information from senior executives would not be easy as environmental management was considered to be a sacred topic in the companies and disclosing information on green initiatives was not encouraged below the level of general managers. It was also found that true picture on the green initiatives taken by various companies cannot be obtained unless the working of at least one company in each industrial sector has been studied by personal visits. Therefore, it was decided to concentrate on finding out influential people in different companies through mutual friends and to approach them to find the required information. Working of one company in each industrial was studied by actually visiting the company and seeing the operations and talking to the field specialists. This was a long and laborious process but was found very successful as it gave the actual picture and lot of information was given by the senior executives after face to face talk and rapport building which otherwise would not have been possible. This link also came very handy when they were given the questionnaire during the data collection. During the visits, it became clear that in many companies, the floor level technical managers were not involved in the deciding making process of green initiatives and they had very little idea on the levels of financial investments and savings accrued by the company and it was observed that no single source listing details of ISO-14001 certified companies in India was available. Therefore, it was decided that apart from normal method of literature review and data collection, lot of emphasis had to be given to the data collected through actual visits to the companies. It was also decided that a comparison on initiatives taken by at least 4-5 companies operating in the same industrial sector need to be compiled and sent to companies in the related field to know their comments which would form important part of this research for providing it originality.

Scope of the Study: This indicated that the Indian industrial sectors were different from their counterparts in the western countries. The environmental management system being adopted by companies in different sectors vary in nature. On one hand there have been laws which were not only strict in nature but their implementation was also effective, for example the laws pertaining to automobile emission like **Bharat – IV** norms. However, majority of other environmental laws in all other sectors were not effective due to poor implementation. The available staff with the various state and central pollution control boards was grossly inadequate to check environmental violations by different companies and no standardized parameters to assess the environmental damage caused by them were in place. Organizations like hotels, hospitals, BPOs and mobile towers etc were not yet considered environmental unfriendly although they consume maximum resources and cause high pollution. Under these circumstances, the companies which have obtained ISO-

14001 certifications can only be considered among those which have adopting green initiatives of some significance.

Research Objectives: As noticed above, the level of green initiatives taken by various companies / factories in India have been found to be very low. While in developed countries, companies have already moved from reactive to pro-active and value seeking levels, it is very unfortunate that, majority of Indian companies at present have been at the lowest level and more than 99% have not even obtained the ISO-14001 certification. There exists a need to motivate all companies to be environmental conscious which they should start by obtaining ISO-14001 certification and the present ISO-14001 companies should graduate from reactive to value seeking level. This could be possible only if companies in India can be convinced regarding the benefits of adopting green initiatives. This low level of green initiatives among Indian companies may be due to weak pressures being exerted by the internal and external stake holders or the companies do not foresee any economic benefits in adopting green initiatives. Maybe the prevailing environment has not been conducive for the management to support an environmental management system. It was also possible that the financial investments required for adoption of green initiatives were high and Indian companies, especially the SSIs could not spare their scarce financial resources. It was also possible that enough evidence to prove that investments in green initiatives can result in financial savings did not exist. Unless there were convincing answers to above questions, companies would not commit their finances and energies in the adoption of green initiatives which may be the cause of low level of green initiatives in India. This research has been aimed at finding out the relative strengths and weaknesses of various factors which force or motivate Indian companies to adopt green initiatives while pursuing their economic aims and to suggest measures which can improve their commitments towards environmental protection. Keeping the above information in view the research objectives formulated are, (a) To assess the strength of various factors (pressures, benefits, investments and savings) experienced by companies in India due to adoption of green initiatives here we have considered all industrial sectors as one data and treating industrial sectors separately. (b) To identify green initiatives which resulted in financial implications to the companies (through validation of various null hypotheses). (c) To find out the level of green initiatives taken by ISO-14001 certified companies in India and to establish relationship between the level of green initiatives taken by companies and their financial implications. (d) To recommend measures for improving the level of green initiative by these companies preferably maintaining the existing level of financial implications. (e) To identify areas where companies had to make high investments for adoption of green initiatives and to suggest measures for decreasing these investments.

Hypothesis:

- **Hypothesis 1:** The adoption of green initiatives resulted in financial implications to the company due to the pressures of i) Share holders ii) Customers iii) Employees iv) Business partners. The adoption of green initiatives resulted in financial implications to the company due to i) Company's requirement to comply with laid down environmental laws ii) Expected reduction in the visits of

inspection agencies iii) Anticipated reduction in resistance from local communities iv) Reduction in pressure from NGOs.

- **Hypothesis 2:** The adoption of green initiatives resulted in financial implications to the company due to i) Similar actions taken by its successful competitors ii) Decisions taken to fulfil CSR.
- **Hypothesis 3:** The benefits obtained through green initiatives resulted in financial implications to the company due to i) Increased profit margins ii) Increased market share iii) Entering new markets. Benefits obtained by green initiatives resulted in financial implications to the company through reduction in i) Gaseous and solid/ liquid waste ii) Emission of exhaust gasses iii) Production costs iv) Increased efficiency. Benefits obtained through green initiatives had financial implications for the company due to i) Increased company's compliance with environmental laws ii) Reduced inspection visits by law enforcement agencies iii) Reduced fines/penalties iv) Increased grants from outside agencies.
- **Hypothesis 4:** The investments in green initiatives resulted in increased financial implications to the company due to i) Research and development of new products ii) Modification of existing equipment iii) Optimization of processes iv) Installation of waste treatment plant. The investments in green initiatives had financial implications while taking measures to i) Reduce air, water and energy consumption ii) Reduce toxic gaseous, liquid and solid discharge iii) Substitute hazardous material. Adoption of green initiatives had financial implications to the company for i) Repair, reuse and recycling of material ii) Supplying waste to other companies iii) Giving incentives to customers to return the products at the end of life cycle iv) Restoration of damage to land and water. Investments by company in green initiatives resulted in financial implications on i) Installation of alternate sources of energy ii) Increased maintenance cost of equipment. Investments in green initiatives had financial implications for i) Locating suppliers closer to the plant ii) Transportation through rail and sea iii) Training of suppliers and dealers. Investments in green initiatives resulted in financial implications on i) Training the employees ii) Incorporating changes in policies and procedures.
- **Hypothesis 5.** Savings obtained by the company resulted in financial implications due to i) Reduction in the use of raw material ii) Reduction in air, water and energy consumption iii) Extraction of energy of hot gasses before emission. Savings obtained due to green initiatives resulted in financial implications to the company in i) Development of new products ii) Modifications in the existing plants iii) Optimization of plants and processes. Savings obtained through green initiatives resulted in financial implications in i) Restoration of damage caused to land and water ii) Supplying waste to other companies iii) Substituting hazardous material with environment friendly material.

Research Methodology: The management decision to adopt green initiatives depends upon the strength of various pressures exerted on it and the benefits apparent by the management as a result of these initiatives. The management would take a decision considering the amount of financial investments required for adopting green initiatives and the financial savings that can be accrued due to resource and other savings.

The management then would take a decision to adopt a particular level of green initiatives depending upon its financial implications to the company.

The research consists of both primary data and the secondary data research. The primary research was carried out by posting the questionnaire on Google form to the companies and holding telephonic discussions with the senior technical managers and the environmental specialists. Primary data was also collected discussions with the environmental specialists working in at Indian Institute of Science and few top builders. We also had an opportunity to speak to ISO 14001 Certified company professionals and officials who would certify the companies. For analysis of data on various parameters, a structured questionnaire was employed. Secondary research was conducted through reputed National Secondary research was conducted through reputed National and International journals, published papers, company web sites and the reports published by authenticated agencies like Indian Institute of Science, TERI and Central Pollution Control Board etc.

The research aimed first aimed to take the questionnaire to at least one company in each industrial sector to understand their nature of operation and the major activities leading to environment damage. The second part was to study the various green initiatives taken by them. It was then decided to upload the questionnaire to google form instead of personal visits. It was also followed by holding telephonic discussions with their technical and environmental managers. Discussions were held with senior managers who were located at various sites to find out various investments and methods that they had accomplished by the company on green initiatives and also the financial savings accrued by the company as a result of these savings. The secondary data were collected through various documents, journals, websites, publications on different industrial sectors like Maruti, Honda cars, Tata motors, Mahindra etc for automobile sector was prepared.

The automobile sector has been the major contributor of environmental pollution and also faces maximum pressures due to stringent emission laws and hence large numbers of ISO-14001 certified companies belonged to this sector. The companies selected in this sector were both the auto manufacturers and major component suppliers. The thermal power plants were also major contributors to the environmental pollution due to high emission of exhaust gasses as well as accumulation of large quantities of fly ash. Thermal power plants belonging to both public and private sector were selected in the survey.

Data Collection: Two types of data collection were monitored they were collection of data through secondary sources and data collection through structured questionnaire. The sampling data was collected from various journals, documents and researchers, and from the initial report of Central pollution control board which had around 132 companies' details. It was known that the time of the data collected had happened between 2015-16 and there were around 4600 ISO -14001 companies in India approximately. Major efforts were made to obtain information through ISO consultants and ISO certified bureaus, we had an opportunity of collecting only the raw data since most of them were not ready to disclose the information for fear of losing the details of their companies and also of fear of competitors. Reports published by approved agencies like CSE and TERI helped us in obtaining the information. Extensive use of literature surveys was made to find the details of more companies. Data on large number of companies

could be obtained through web searches by visiting the sites of individual companies. Major part of the data was also collected through national and International journals like Emerald, Elsevier, Springer and IEEE. The questionnaires were mailed to few known ISO-14001 certified companies in and around Bangalore and Mangalore industrial areas. The selection of the company was done to ensure the uniformity of sampling. Efforts were made to inform that the questionnaire were made available on Google form. Around 3 major companies in Mangalore and one in Bangalore were covered. Executives, Project managers, CTO and VP training and development of these companies responded in different ways. We also had an questionnaire for customers, just to feel their jest towards green initiatives, we could contact only 45 customers near Malls and electronic outlets in Bangalore. This method was only an interview type of data collection. Out of 57 top level Managers only 48 could respond to the questionnaire, However, practically in more than 90% cases, an apprehension was found in the minds of the executives to disclose the data on their environmental initiatives taken by their respective companies. Most of them filled only what they could understand and found to be good. They also had an intension of not revealing the company's information.

Result Analysis: It was found that companies adopted green initiatives under pressures exerted on it by various internal and external stake holders, laid down environmental laws or as part of social responsibility. In every case, the level of green initiative adopted by the company would depend upon the relative strength of these pressures which would depend upon its nature of operation. It was found that very few companies had adopted green initiatives because of the pressures from share-holders indicating extremely low pressures being exerted by them. This result brought out that share-holders in India carry apprehensions in their minds that investments in green initiatives by the company would reduce their profits. This also indicated that shareholders in India were not willing to sacrifice part of their profits for extra investments in green initiatives. The pressures by the customers on the organizations to produce green products had been found to be low (56.1%). This indicated that the organizations in India believed that as customers in Indian markets were not willing to pay additional price for green products hence, it would not be economically profitable for the companies to invest in green initiatives. Among the eight sectors, pressures from customers were found to be very low in cement (29%), service (40%), automobile (55%), and chemical (57%) sectors. Even among the rest four sectors, the customer pressure was found to be moderate. This indicates that the need by customers to increase their pressure on the companies to increase adoption of green initiatives especially in the above four sectors. The pressure exerted by the employees on the organizations to adopt green initiatives was found to be low, indicating that either employees had very limited role to play in deciding the strategies of the organization or they believed that investments by company in green initiatives will reduce its profits affecting employee's increments and bonuses at the end of the financial year. The other pressure that we could find was from NGO's Pressure, Pressure from Business Partners, Pressure from local communities, Pressure of the company towards Corporate social responsibility, and their mind set towards adherence to environment laws and finally frequent visits of law enforcement officers.

Recommendations: From the result and research analysis it was found that the adoption of green initiatives by ISO-14001 certified companies in India had been at the lowest level called the reactive. In this level, adoption of green initiatives was mainly to adhere to the laid down environmental laws so as to reduce penalties as well as risk of closure of business. Companies adopted minimum initiatives in response to the changing environmental conditions and did not make any efforts to generate profit through waste reductions and optimization of processes. Needless to say, that environmental initiative taken by non-ISO-14001 companies would be much lower. Therefore, there exists an urgent need to increase the existing levels of ISO-14001 certified companies in India from reactive to next higher levels called pro-active and value seeking. A company takes reactive levels of initiatives when it experiences low pressures, obtains low benefits from its initiatives, incurs high levels of financial investments and obtains lower levels of savings. In order to increase this lower level to next higher level, the pressures exerted on the company need to be increased. Also, the benefits obtained by the companies require increase.

- Shareholders need to increase their pressures on the company to adopt green initiatives. Shareholders need to be appraised that environmental violations might result in high penalties or risk to business. Also, investments in green initiatives by company would not reduce their earnings per share and could be financially profitable in the long run due to increased savings and benefits as brought out by this research.
- Existing customer pressures was found to be very low and needed to be increased. Customers need to exert more pressure on the company by buying only green products even at little higher cost. It would put more pressure on the companies for adopting green initiatives. Employees need to exert more pressure on management to adopt green initiatives.
- Employees should be made aware of the fact the investments in green initiatives would not adversely affect their salaries, bonuses etc but environmental violations might result in loss of their jobs.
- Local communities in India have not been exerting adequate pressure on polluting companies to adopt green initiatives. This showed a non-involving attitude and needs to be changed. Local communities should increase their pressure on the companies to adopt green initiatives as they would be the first ones to get affected the activities of companies in their vicinity.
- Most of the companies were of the view that adoption of green initiatives would not result in increase in profit margins making it a low motivator. Companies need to change this perception by resorting to reductions in production costs through savings in raw material and other resources as has been achieved by companies in the developed world.
- Companies were convinced that adoption of green initiatives would result in their entry to new markets. Therefore, it offers an opportunity to the firms to go green and exploit markets which were prohibited for the non-green products reaping rich benefits.

Conclusion: We have tried to highlight the status of various pressures which were found to be noticeable among them were pressures from shareholders, customers, employees, local community, NGOs and from successful competitors. Increase of these pressures would force companies to adopt higher levels of green initiatives. Factors which brought low benefits to the companies were profit margins, market share

and entry to new markets, production costs and reduction in visits from environmental agencies. By increasing these benefits, companies' motivation to adopt higher levels of green initiatives could be increased. The areas where companies had to make high investments and required reduction were optimization of production processes, repair/reuse/recycling, installation of waste treatment plants, reduction in air water and energy consumption, installation of alternate sources of energy, land and water restoration, employee training, hiring of ISO consultants and reduction in emission of toxic gasses. The areas where companies could not obtain high savings were found to be reduction in raw material, R & D of new products, extraction of energy of gases before emission, suppliers' location, green transportation, land water restoration, supply of waste to other industries, premium price, increased market share, entry to new markets, grants from agencies, reduced penalties, trading carbon credits, employee and supplier training. Companies need to adopt proper methods applicable to their environment for increasing savings in these areas. The areas where companies were able to extract high savings were reduction in air water and energy consumption, optimization of processes, installation of alternate sources of energy, substitution of hazardous materials, changes in policies and procedures and brand image due to CSR. This gives a ready-made list for companies which have not adopted green initiatives to become environmental conscious by adopting green initiatives starting from these areas. This would give them the advantages which green companies have been able to achieve.

