

GMS is Powerful Force in Passenger Car Segment of Indian Automobile Industry to Enhance Innovation and Widen Profits

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Abstract - Green marketing strategy (GMS) is the fastest growing trend into the business firms all around the globe due to ever increasing pressure of stringent legislations, customer awareness etc. Automobile industry due to its large share in disturbing the ecological balance and hence always been on stakeholders' radar is an industry which needs to be checked for its GMS. An analysis of the passenger car segment of Indian automobile industry indicates that the firms are slowly and steadily adopting GMS. According to my research the selected top ten companies, as per the sales figure of March 2014, have an environmental statement plan with clear objectives and all firms seem to be working intensively on renewing the product range, improving industrial processes, strengthening the image of their brands by releasing their brand to the public via channels of communication. While adoption of GMS add value to the firms in the form of cost saving as for example, in the year 2013-14, the activities aimed to reduce the waste at Toyota Kirloskar resulted in 5.3 Kg/vehicle reduction which amounts to lowering of steel consumption by 293 MT/year. This lead to a saving of nearly Rs.12, 30,600/year (Toyota Kirloskar Sustainability Report, 2014). At Nashik automotive division in M&M, since 2009, a total of 51 projects have been initiated at the unit which collectively saves 286345m³ of water and INR 520 thousand every year. The energy saving intervention in the plant of Mumbai helped in monetary savings INR 7.25 Lakhs per annum (Mahindra and Mahindra Sustainability Report, 2013-2014). TML RECON business is of Rs.1.3 billion in 2014. (Tata Motors Limited Sustainability Report, 2013-2014). It also add value by creating innovations both in the product and processes. Maruti Suzuki, for example, has developed a new Intelligent Gas Port Injection (i-GPI) technology for CNG bi-fuel vehicles. The i-GPI technology promotes uniform and complete combustion in the combustion chamber, resulting in lesser pollutants, without compromising on the vehicle's power and performance. The Company has successfully launched bi-fuel variants with i-GPI CNG engine technology. With this technology, in each CNG vehicle CO₂ emissions are reduced by an average 20 per cent as compared to the petrol variant. In the process of minimizing carbon footprint of its manufacturing operations Maruti Suzuki has started using natural gas at its captive power plants. In 2013-14, the Company commissioned a 1 MW solar power plant at the Manesar facility. These initiatives taken by firms indicate that how GMS is becoming powerful force in automobile Industry to buildup innovations and profits.

Key word: Marketing, Green Marketing, Passenger car, Strategy

1. INTRODUCTION

To add the competitive advantage against the competitor companies in automobile industry, one option that firms have recognized is the green marketing strategy. Changing business environment always ask for some unique business strategy and in this regard green marketing strategy (GMS) is becoming prominent strategy with the increase of environmental awareness among the consumers. Green marketing strategy therefore is an innovative approach that many business firms have decided to adopt to reach to its customers. [1]. In such cases, Green marketing strategy is a means to ensure that the marketing actions of a firm are fine tuned in such a way that it is reducing the harmful effects on the environment.

However, reducing the harmful effect on environment has yet not been an easy task for many industries. In India, for example, the automobile industry which has seen a dramatic change in last few decades with the increasing number of people using their individual cars for commuting[2]. The automobile industry is heavily dependent on renewable energy resources while manufacturing and later on its emission also contribute to the environmental imbalance. In today's resource constrained world, the way businesses operate has significant bearing on the development imperatives of our future generations. On the other hand, for a lot of customers, adjusting from car to more environmentally friendly forms of transport means a conflict between individual immediate interests and lasting interests [3]. For companies, a new point of view on customer acceptance and insight to environment friendly products as well as environment friendly plan symbolize a huge space of opportunities as green marketing strategy can be a profitable endeavor [4]. Maruti Suzuki, for example, has developed a new i-GPI technology for its CNG bi-fuel cars.. Due to the technology, CO₂ discharge in CNG based vehicle has been decreased by almost 20 per cent in comparison to the petrol based vehicle. Starting in 2006, MSL has sold more than 4.1 lakh cars which resulted into saving of approx. 2 lakhs and 24 thousand tones carbon dioxide collectively till March, 2014[5].

On the other hand, Firms also need to adopt a “green marketing strategy” that facilitates them to take decisions that is environment friendly. Number of researches shows that companies may get advantaged by including environmental sustainability concerns into the business activities [6] [7][8] [9] [10] [11] [12] [13]. Enhanced efficiency in the use of resources, return on investment, bigger sales, expansion of new market places, better corporate image, product differentiation, and enhanced competitive advantage are some of the benefits which companies can get when integrate environmental sustainability matter into business [6] [7][8] [9] [10] [11] [12] [13] but to obtain such benefits, appropriate strategies are required. Green manufacturing process, environmental friendly product development and helpful green marketing communication play an important role to succeed [14]. For the sake of environmental sustainability, it is essential that companies accept that green marketing must be a fully integrated part of a firm's strategic marketing plan. In the present scientific work my goal is to study how firms have used the eco-friendliness approach and GMS more specifically in the automobile industry that too in car segment, as a marketing strategy. My analysis indicated that how GMS is become powerful force of automobile Industry to buildup share and profits.

1.2 Status of Passenger Car Segment in Indian Automobile Industry

The automobile industry of India has come out stronger from the current worldwide recession, and overall sales have achieved unprecedented numbers in the recent past across the entire segments.[15] As per the Demography and economical aspect, the automotive industry of India is perfectly-positioned to derive growth, catering the needs of Indian market and at the same time export prospects too. An expected addition in India's workable population is apt to help stimulate the growing market for personal vehicles. Growing wealth, easier access of finance as well as the increase in affordability is likely enhancing the sale of cars. As Indian market is set to become world's leading car markets, it is exciting to see its historical development in appendix A. In 1900, Indian car industry has only one player which in next 20 year increased to two players. In next twenty years, six players entered in the Automobile market. In next forty years it remained varied between 4-6. However, the year 1990 see the biggest change when 16 players entered into Indian car market. India's

attractiveness as market for car producers has been highlighted by the number of new companies coming to India during the last two decades when the automobile player's number has increased to 20.

Environmental friendly passenger cars in India:

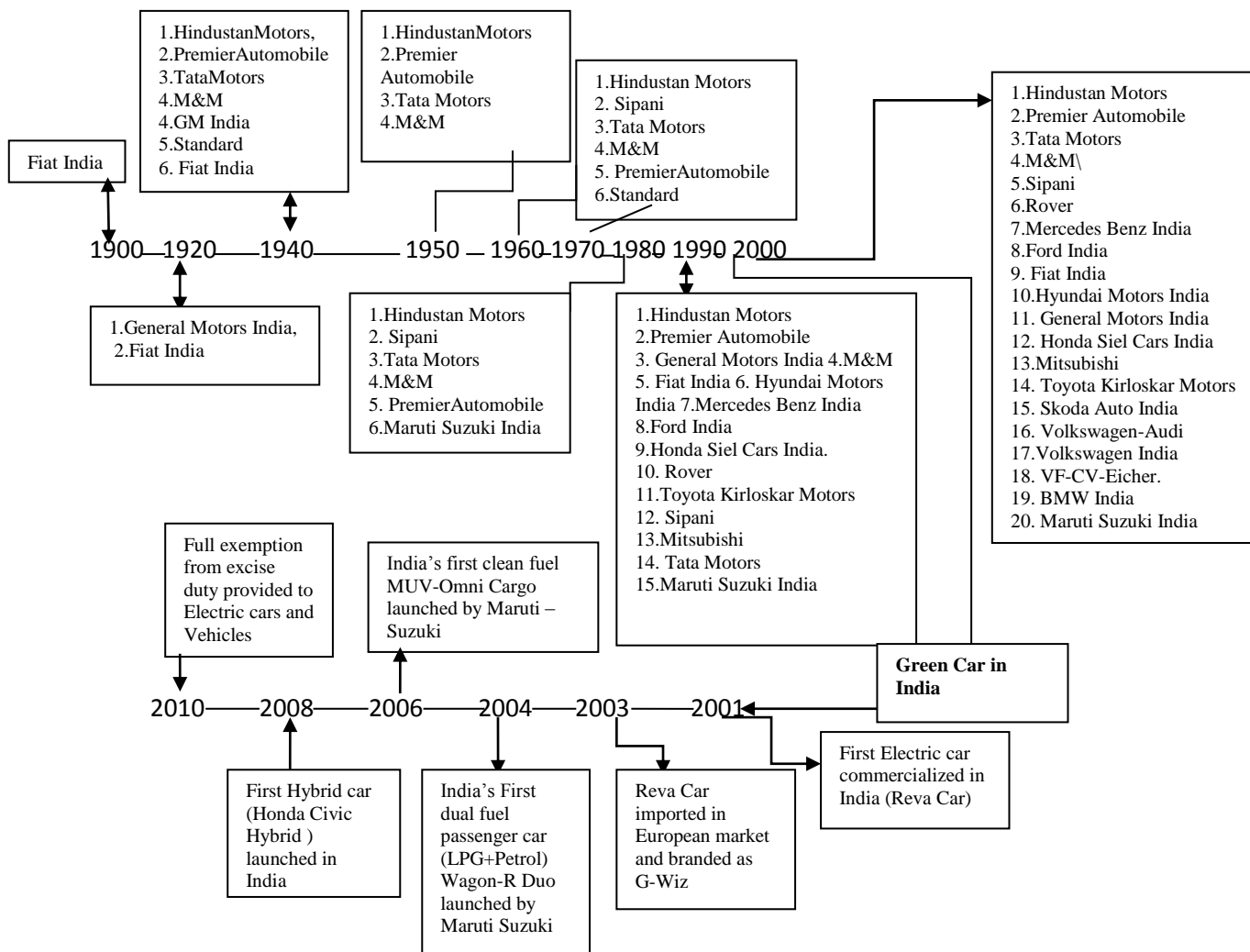
The journey of environment friendly cars in India has taken a different route to that of global automobile industry. The journey of environment friendly cars started with regulatory drive but latter with the awareness of these products and at the same time apparent financial benefit became the agent for demand. [15] Maruti Suzuki Limited became the first player to see the demand and in 2004 launched CNG based cars in Indian market. A report of KPMG (2010) states that today the car segment in India appears to be assessing two options in its journey towards eco friendly cars. The first one is CNG/ Dual Fuel Vehicles and the second one is Electric/ Hybrid Vehicles.

1. METHODOLOGY

To understand the green marketing strategy in the car segment of automobile industry we have tried to conduct both quantitative and qualitative study. The research area selected in this study is Indian automobile (car) industry. The automobile industry has significant place globally due to its relation both forward and backward with rest of industry. The automotive industry is one of the most important because of its contribution to overall GDP. Direct and indirect employment in different areas like designing, engineering, manufacturing and supplying parts and components to assemble, sell and service makes the industry important from national perspective. Moreover, the automotive industry also serves as the consumer of number of goods and serviced that induces raw material, construction machinery, legal, computers and semiconductors, financial, advertising and health care. In India, the automobile industry accounts for 22% of country's manufacturing gross domestic product (GDP). Data shown by [16], the automobile sector has attracted FDI worth US\$ 12,232.06 million during the period April 2000 to February 2015. In 2013, the India automobile has contributed to almost 7% gross domestic product of India. The Indian automobile industry is accountable for giving employment to 7 to 8% of India total employed population of 2013. The automobile sector has also complements the research and development sector in India and helps to gain technical knowhow by multiple tie-up and alliances.

APPENDIX A:

Automobile and Green vehicle Evolution Timeline in India



2.1 Research Strategy

This research employs a qualitative study by collecting data from the sustainability/annual report of the ten companies in the industry functioning in India (see Table 1).

Table.1 List of the companies:

Sales (Domestic) upto March 2014	Passenger Vehicle makers	Position
102269	MSIL	1
35003	HMIL	2
23433	M & M	3
18426	Honda	4
12640	Tata	5
8206	Toyota	6
7031	Nissan	7
6601	GM	8
6356	Ford	9
5465	Renault	10

Note that, I strategically chose these firms because these are the top ten companies as per the sales records on March 2014, other reason is that the operational scale of these multinationals requires massive consumption of natural resources. The investigation is divided in two parts, part one includes the analysis of firms' sustainability and/or annual reports, part two interviews via email and physical interface with business people in India. To study the annual/sustainability report of the selected firms, I have selected four variables which are described below. The

motive is to understand the attitude and performance of the firms with regard to environment.

A. Green reporting. I believe that if all firms are serious about the environmental issue; they would be taking initiatives and would be reporting on regular basis through their annual/sustainability or environmental report with special reference to environment. To report on regular basis, the firms might have some fixed environmental policy too. So I will check whether firms are mentioning their environmental initiative in

their website or not at the same time will also check whether firm have fixed any environmental policy or not.

- B. Training program for environmental sustainability. I assume that training imparted to the people inside the firm is essential if firms have to adopt any sustainable green marketing strategy. Hence, I examine if firms clearly mention about the training programme.
- C. Campaigns for environmental sustainability. The environmental initiative is an important tool that shows the firms' environmental friendly offers. Therefore, I check whether firms have promoted their environment friendly initiative through campaigns, seminars, events .
- D. Promoting environmental certification among the supplier. Suppliers have a major role in the automobile industry hence I believe that requiring suppliers to obtain ISO 14001 or any other green certificate can assure green performance and efficiency in the whole supply chain and benefit the firm as a whole.

It is important to highlight that in the sample of ten companies (see Table 3) I address questions, which are displayed in the table's title, related to the above key variables. The tables illustrate some trends about environmental firms' actions. In the interviews, the way that the questionnaire is structured enabled me to get valuable qualitative information that would be comparable across companies. The format of the questions is a mixed of dichotomous, i.e., a yes/no type answer and multiple-choice.

The aim is to understand the nature of linkage between business & Pollution with reference to car industry in India. The key issues are defined as follows:

- To investigate the firms' green strategy
- To investigate whether firms' green marketing can encourage environmental friendly innovation.
- To investigate whether firms' green strategy can increase overall performance.

2.2 Research Approach

The research approach is based on both, primary data whose focus group are people who work in the business, marketing or sustainability and environmental policy department of the concerned companies, as well as secondary data which consist of previously published material such as annual and/or sustainable reports on firms Indian website/corporate website. Besides that to obtain a better picture of the trends in India I have used statistical data from SIAM and general policies information from The Indian Ministry of Environment, forest and climate change. In this paper, I address the four following questions:
Whether the automobile firms in India have developed their green marketing strategy or not?
If yes, whether it encourages environmental friendly innovation?
If yes, whether it encourages overall performance?
If not, what are the reasons?

To answer the entire question I will use the questionnaire interview since it tries to capture the overall firm's motivation to introduce green facilities, to adopt an environmental management system, green marketing mix policies, etc which are in a way linked with Green Marketing Strategy. The questionnaire also include question on environmental friendly innovation, overall performance. The other method is by using the firm's reports available on its Indian homepage. For the purposes of the present study, the core of the investigation is based on the firms' reports (secondary data) rather than interviews (primary data). First, I assume that the reports are reliable sources since it is one of the channels that firms communicate with their shareholders, and the public in overall mainly to explain the company's efforts to address environmental concerns. Second, most of the information in the questionnaire is in somehow mentioned by firms in their reports then the interviews represent extra information to support and validate my analysis. Finally, the emphasis on secondary data can be good to my research since it can provide a background to primary research as well as it may help to illustrate active trends[17]

2.3 Research Process

I started my research by contacting people who work for the automotive industry in India in order to present my research outline. I contacted ten firms (see Table 1) via the numbers and mail ids available on their official website and then I got the phone numbers of the people responsible for the marketing and/or business department. After contacting them, I sent the questionnaire via email, which was requested to be returned after one or two weeks. Most of the people contacted accepted to receive my questionnaire; however, most of them never sent it back. Hence I started finding the persons belonging to the concerned companies in the market to get the questionnaire filled. Mostly what I got was the Dealer/Distributor point. Dealer and distributor were unable to answer to such specific questions. For most of them the questions were much more suitable to the manufacturer sector which is located either outside of the country or out of state. To broaden the scope of my research I decided to contact firms via their international homepage. Initially, I contacted its customer service, which redirected my questionnaire to the sustainability and environmental policy department and a business manager accepted to answer it. On the other side, some companies said that the excess of inquiries had exceeded their capacity in the sense that they could not to attend my request. Other firms advised me to search such information on their reports and the others did not replay even though I sent emails to their communication service twice.

2. Descriptive Results

Before presenting an overview about the empirical findings I will divide the analysis into two subsections. In Section 3.1, I describe the main points of the interviews and make comparisons among the companies. In section 3.2, I display my analysis about the four variables (Green reporting, Training program for environmental sustainability,

Campaigns for environmental sustainability, Promoting environmental certificate among the supplier) discussed in the firm's reports. In the subsequent section namely analysis and discussions; I make a link between the empirical results and the theoretical framework.

3.1 Interview

Questionnaire has been sent to all the ten companies through email id collected from the official website of the respective companies. But most of them never gave the reply. So I decided to visit personally to meet the managers of the companies whose office is situated in Jharkhand, (India).

On the question of whether the respective companies have any specific person with the explicit responsibility of environment, only three companies official said yes and rest said no. The two companies out of which said that these people are working in the marketing/sales division whereas one company told that there is a specific division for environment. On the question of whether the firms are communicating with their suppliers for green issues all the firms except Mahindra and Mahindra, General Motors and NISSAN showed that they are communicating and the suppliers are taking measures too. On the question of implementing environment management, companies like TOYOTA, MARUTI, TATA MOTORS are running training programs, Ford is running prithawi diwas, Honda is doing Environmental training program in place for employees, Written environmental policy, Carry out internal environmental audits, Environmental performance indicators/goals. However companies like Hyundai, General Motors, Nissan, Renault has left the space blank. None of the company except Honda said that there is some environmental management system at place while doing business in India. All the companies are taking some concrete action to reduce the environmental impact some major actions are Use of natural resources (energy, water, etc.) Solid waste generation, local or regional air pollution. All the firms are saying that they have improved the fuel efficiency. Only two companies Maruti & Tata Motors are taking concrete action regarding End-of-life (ELV) directive in case of operations in India. All the firms are taking marketing campaigns too for environment awareness. All the firms have responded positively on the question of taking initiative regarding innovation to lessen the impact on environment. It is significant that all the firms are of the view that their sales performance have improved due to Green marketing except Renault, NISSAN.

3.2 Analyzing Firms' Reports Environmental Statement Plan

All firms under analysis have an environmental statement plan with clear objectives. They claim to integrate environmental management goals into the product lifecycle at every stage from design to recycling as well as the development of new and efficient technologies. The statements are written indications that companies are in line with the needs to have guidance to address their contribution to the environment. Firms seem to be working intensively on renewing the product range, improving industrial processes, strengthening the image of their brands by releasing their environmental commitments to the public via annual reports, sustainability reports or in other channels of communication such as press release or homepage, especially on sections dedicated to the environment. Their guiding principles includes the development of green technologies, i.e., vehicle with less CO₂ emission, recycling, energy consumption, reducing waste and pollutants, air quality, among others (appendix B).

Appendix B:

One can observe in Table No. 2 that all of the firms (in the sample) reported commitment to reduce energy consumption; however, only 90% reported the introduction of eco-design in their plants. This can be explained by the fact that such technologies are more investment intensive. I consider eco-design here as the use of green alternative technologies such as power-generating wind turbines, solar energy panels, etc that are assumed to be environmental friendly. Another variable that firms have been committed is the reduction of waste and pollutants with 90% of the firms addressing this topic in their reports where as all of the firms have addressed the issue of recycling in their report. Besides that, cutting water use and Biodiversity Management have also been found in the reports of all the companies except few exceptions. Like Maruti Suzuki India Ltd has not reported any measure regarding Biodiversity in its report. At the same time Nissan apart from preserving water and biodiversity also work towards preserving soil.

Table No.2 Summary of the Empirical Findings related to Corporate Reports

Companies	Energy Consumption	Eco Design	Reducing Waste and Pollutants	Recycling	Others
Maruti Suzuki	Yes	Yes	Yes	Yes	Water consumption Reduced, Optimal utilization of Raw materials
Hyundai*	Yes	Yes	Yes	Yes	Water Management ,Bio Diversity Management
Mahindra &Mahindra	Yes	Yes	Yes	Yes	Bio Diversity, Water Consumption, Packaging
Honda*	Yes	Yes	Yes	Yes	Water Management ,Bio Diversity Management
Tata Motors	Yes	Yes	Yes	Yes	Water Management ,Bio DiversityManagement
Toyota	Yes	Yes	Yes	Yes	Water Management ,Bio Diversity Management
Nissan	Yes	Yes	Yes	Yes	Preserving Water, Soil & Biodiversity
General Motors*	Yes	Yes	yes	Yes	Water Management ,Bio Diversity Management
Ford*	Yes	Yes	Yes	Yes	Water Management ,Bio Diversity Management
Renault	Yes	Not Found	Not Found	Yes	Not Found
Total	100%	90%	90%	100%	

Note :(*) represents that the Indian website does not indicate any information regarding the sustainability report. It is available on the corporate report.

It seems that firms have moved a step further by creating internal measurement to link their actions with performance. Table 3, in the appendix B, displays such trends where some firms have been proactive in developing their measurement of performance. However, others only describe their initiatives without showing quantitatively

how much they reduced in terms of CO₂ emission for instance. I also noticed that even though firms address their commitment with respect energy consumption, there is few published data about energy consumption or percentage and total volume of water recycled and reused.

Table No.3: Have firms informed any measurement performance or internal index program that links their actions with their results?

Companies	Yes	No	Main Commitment	Some Initiatives	Result
Maruti Suzuki	Yes		Reduction in CO ₂ emission, reduction in landfill waste, Development of alternate fuel, Development of ELV compliant products, Reduction in ground water consumption	1 MW solar plant at Manesar in progress Projects for advanced technologies in hybrid and electric vehicle integration and addition of new features were taken up to enhance capability in various fields and develop new technologies for future readiness	Tree plantation in community: over 1500 Tree plantation in facilities: 22,0006133 T hazardous waste co-processed 1800 m ³ of rain water harvested. 13,611,026 m ³ of water recycled and reused Fuel efficiency was improved by 2% to 15% in petrol models and 2% to 10% in diesel models Ertiga CNG variant launched Fuel efficiency of existing CNG models was improved by 2% to 14% Alto 800 and Ertiga launched in the year were ELV compliant All existing and new models except Gypsy were made OBD - II compliant well ahead of the requisite time of implementation, i.e. April 2013. 72.6% tier-1 suppliers certified to ISO 14001 Around 23 tons of polythene and 300 kg of carton boxes were removed from packing wastes of regular components Supply of batteries in trolleys commenced
Mahindra & Mahindra	Yes		Specific Carbon Footprint Reduction [GHG Emissions Scope 1+2] (Tonne/eq. vehicles) Use of Renewable Power (% of total power) Specific Water Footprint Reduction (kl/eq. vehicles)		Against the base line of 2012-2013, Carbon Footprint has been reduced by 4% and target has been set to reduce it by 20% in 2014-2015 Against the base line of 2012-2013, 1.7% increase and 5% target has been fixed for 2014-2015. Against the base line of 2012-2013, 14% reduction has been achieved and 25% target has been set for 2014-

		<p>-Waste Impact Reduction -Reduction in Paint Sludge (kg/eq. vehicles)</p> <p>Reduction in Packaging Waste (kg/eq. vehicles) Wood</p> <p>Corrugated Box</p> <p>Capacity Building (no. of suppliers)</p> <p>Assessment & Green Rating (no. of suppliers)</p> <p>Energy-efficient Projects</p> <p>Emission Reduction for M&M Fleet(gm/km)</p> <p>Knowledge Enhancement in Sustainability Parameters -Coverage of Sr. management -Coverage of Mid. & Jr. Management</p>	<p>Target has been fixed to 100 projects.</p>	<p>2015</p> <p>Against the base line of 2012-2013,22.7% reduction has been achieved and 25% target has been set for 2014-2015</p> <p>Against the base line of 2012-2013,28% reduction has been achieved and 15% target has been set for 2014-2015</p> <p>Against the base line of 2012-2013,10% reduction has been achieved and 15% target has been set for 2014-2015</p> <p>110 Suppliers have been included in capacity building and target of 400 has been set for 2014-2015.</p> <p>50 suppliers have brought under the Assessment and green rating and target for 2014-2015 to increase this number by another 150.</p> <p>Against the base line of 2012-2013,7% reduction has been achieved and 5% reduction target has been set for 2014-2015</p> <p>49% of the Sr. Management has been brought under knowledge enhancement in sustainability parameters and target for 2014-2015 is to increase it to 75%.</p> <p>41% of the Sr. Management has been brought under knowledge enhancement in sustainability parameters and target for 2014-2015 is to increase it to 90%.</p>
Tata Motors	Yes	<p>Water Management</p> <p>Energy and Emissions</p> <p>Material Management</p> <p>Waste Management</p> <p>Biodiversity Management</p>	<p>Found Water Foot print in the manufacturing units in India</p> <p>Investing in green buildings 'Recon' (reconditioning) business was conceptualized</p>	<p>commissioned a Biogas plant at our Pune plant</p>
Toyota Kirloskar Motor	Yes	<p>Reduce Electricity Consumption (kwh/Veh)</p> <p>Reduction in LPG consumption(kgs/veh)</p> <p>Total reduction in CO₂ emission(ton/MWH)and</p>		<p>Against the target of 475 kwh/veh and 367 kwh/veh in plant 1 and plant 2,the achievement is 501kwh/veh and 367kwh/veh respectively.</p> <p>Against the target of 24.41kgs/veh and 19.87 kwh/veh in plant 1 and plant 2,the achievement is 25.74kgs/veh and 19.87kgs/veh respectively.</p> <p>Against the target of .512/2.94ton/MWH and GJ/Veh and .45/2.84 94ton/MWH and GJ/Veh in plant 1 and plant 2,the achievement is .66/2.84 ton/MWH and</p>

			<p>Energy(GJ/Veh) Electricity=1 kwh=.934kgsc₂=50.36GJ LPG=1 kg=2.82kgco₂=50.23GJ</p> <p>Water consumption reduction(m³/veh)</p> <p>Increases the steel yield ratio(%) by enhancing 5R activity involving all stakeholders</p> <p>-Reduce hazardous waste generation -Continue efforts to achieve zero waste to landfill</p> <p>Reduce VOC emission (gm/m²)</p>		<p>GJ/Veh.and65/2.84 ton/MWH and GJ/Veh respectively.</p> <p>Against the target of 3.86 m³/veh and 3.4m³/veh in plant 1 and plant 2,the achievement is 3.74 m³/veh and 2.89 m³/veh respectively.</p> <p>Against the target of 73% and 68.76% in plant 1 and plant 2,the achievement is 73.14% and 68.76% respectively</p> <p>Against the target of 6.8 and 5.14 in plant 1 and plant 2,the achievement is 4.3 and 5.14 respectively</p> <p>Against the target of 39.4 gm/m²and 16.34 gm/m²in plant 1 and plant 2,the achievement is 36.46 gm/m² and 16.34 gm/m² respectively</p>
Hyundai		Not found			
Honda	Yes		Energy & Emission		<p>Installed an insulator cover over injection barrel heaters to reduce heat loss and maintain barrel temperature for production. Through this effort, HCIL was able to reduce power consumption by63,840 kWh per year and achieve a CO₂ emissions reduction of 34.86 metric tons per year replaced 175 units of 250-watt conventional sodium vapor streetlights with 90-watt LED lamps. Through this effort, HCIL reduced energy consumption by more than 60,000 kWh and reduced CO₂ emissions by 35 metric tons per year. Furthermore, LED lighting is considered to be environment responsible, as it does not contain harmful mercury</p>
General Motors	Yes		<p>Energy Use & Emissions</p> <p>Waste</p> <p>Water</p>		<p>General Motors are taking target towards reduction in carbon intensity and energy (20%) by 2020 (against a 2010 baseline). While beside 2010 (baseline year) the firm has taken in energy enhancement of 11%, whereas 11% reduction in carbon emissions intensity as well.</p> <p>General Motors is taking 2R (recycle and reuse) and compost to generate 85% waste. In this way it could be possible to avoid about 10 million MT (metric tons) of carbon dioxide equivalent emissions. In 2014, GM has enhanced the waste intensity performance by 7 percent and improved landfill free operations to 122 facilities.</p> <p>By 2020,a target of 15 % decline in water intensity in comparison to 2010 baseline is being fixed. In 2014, During 2014, 2% reduction is observed in comparison to 2013.</p>

Ford	Yes		Energy Use & Emissions		The company decreased emissions of the carbon monoxide 18% during 2007 to 2013 in European countries. In U.S. during 2013, the average fuel economy of our car fleet decreased by 2% in comparison to 2012. During 2013, CO ₂ emissions per vehicle produced has reduced by 9%.
			Waste Management		During 2013, waste to landfill per vehicle produced reduced by 14% in comparison to 2012.
NISSAN	Yes		Zero-emission vehicle Penetration	Launched e-NV200, the second EV model; launched the Venucia e30 for the Chinese market; Some processes for battery production started by Nissan Motor Iberica (Spain) and Dongfeng Motor Co., Ltd. (China)	Achieve 90% reduction in CO ₂ emissions from new vehicles by 2050 (vs. 2000)
			Corporate carbon footprint minimization	End of the Yokohama Smart City Project, which achieved 25% CO ₂ reductions through solar power, "Vehicle to Home" and EVs	Against the target of achieving 80% reduction by 2050 (t-CO ₂ /vehicle, vs. 2005), 22.6% reduction has been achieved in 2014.
			New natural resource use minimization		Reduce ratio of new natural resources per vehicle by 70% (vs. 2010)
Renault		Not found			
Total	80%	20%			

Regarding the green training, almost all except three enterprises include green issues as part of their training programme curriculum (see Table 4, appendix B). Maruti, Honda and Renault, did not show information about this. In the overall, it seems that firms are exploiting their internal capabilities to encourage awareness and participatory management structures.

Table No.4: To raise employee's environmental awareness firms have any educational (training) program whose focus on environmental issue

Companies	Yes	Not found	Specification
Maruti		Not Found	
M& M	Yes		At Esops, Mahindra's Employee Volunteering Programmed, passion joins hands with compassion to drive positive change in the areas of education, environment and health care.
Tata	Yes		Earth hour celebrations at Tata Motors
Toyota Kirloskar Motor	Yes		Eco CSR, Eco Quiz among Managers
Hyundai*	Yes		Environmental coordinator training program, Environmental workshop for production site environmental managers
Honda*		Not Found	
GM	Yes		GM has developed a Global Environmental Certification as well as Training Program with a focus on GM Environmental Principles, internal environmental performance criteria at the same time best practices of industry.
Ford	Yes		Availability of eco-driving tips on website; Availability of online training through the Ford Driving Skills for Life (DSFL) program.
NISSAN	Yes		Based on ISO 14001 activities, the company conducts employee education rooted in NGP2016 regarding reduction of CO ₂ emissions, energy and water consumption and waste. In addition, education regarding environmental accident prevention, including the management of hazardous materials, is provided to all employees including those from affiliated companies working in Nissan production facilities.
Renault		Not found	
Total	70%	30%	

In terms of green marketing campaigns, only 40% of the firms have used sponsor events to address climate change (see Table 5, appendix B)

Table No.5: Has the firm used their marketing campaigns or sponsor events whose target is to educate drivers or community about green issues.

Companies	Yes	Not found	Initiatives
Maruti Suzuki		Not Found	
M& M		Not Found	
Tata Motors	Yes		Tree Plantation Drive, Promoting use of clean energy – Domestic Bio-Gas Plant
Toyota Kirloskar Motor	Yes		Vehicle Switch off campaign at Traffic Signals, Green Bus Campaign
Hyundai		Not Found	
Honda		Not Found	
GM	Yes		In the year 2014, GM Global Rivers Environmental Education Network (GREEN) celebrated its 25 th year which is an unique conservation education program .
Ford	Yes		In 2013 Ford held a Personalized Fuel-Efficiency App Challenge that helped in conception of a wide variety of applications to help consumers in improving their performance of fuel economy and share the information with others. In the same year, Ford maintained to carry the ECOWILL project. This project stands for Eco-Widespread Implementation for Learner Drivers and Licensed Drivers.
NISSAN		Not found	
Renault		Not found	
Total	60%	40%	

In addition, an interesting aspect to create environmental awareness along corporations' supplier chain is that the majority of firms explicitly inform that their supplier are required to acquire ISO certificate as well as are encouraged to implement some environmental management (see Table 6, appendix B).

Table No.6: Has the firm encouraged its suppliers to obtain any green certificate such as ISO14001, EMAS, etc?

Companies	Yes	Not found	Initiatives
Maruti Suzuki	Yes		72.6% tier-1suppliers certified to ISO 14001
M&M	Yes		50 suppliers have brought under the Assessment and green rating and target for 2014-2015 to increase this number by another 150.
Tata Motors	Yes		In 2011-12, Tata Motors mapped the carbon foot print of more than 300of our suppliers. As next step of this process, these suppliers were given a target to reduce their carbon foot print by 5%. Tata also encourage our suppliers to go for ISO 14001 certification
Toyota Kirloskar Motor	Yes		In 2013-14,100% of Suppliers (core)are ISO 14001 compliant.
Hyundai*	Yes		All the first tier suppliers have implemented ISO 14001 certification
Honda*			
GM		Not found	
Ford	Yes		
NISSAN	Yes		In fiscal 2014, it gained an understanding of the environmental impact of its suppliers by working together with CDP, an international nonprofit organization that manages a global system for disclosure of companies' environmental impact and strategies.
Renault		Not found	
Total	70%	30%	

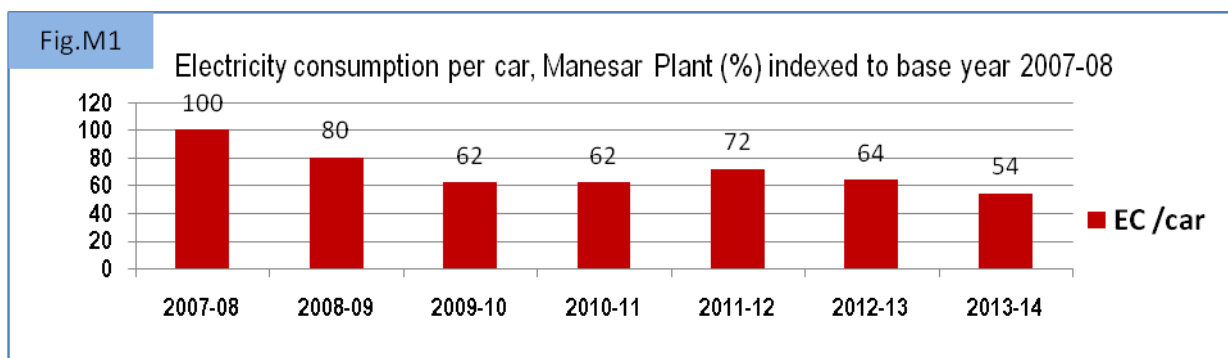
APPENDIX C: Firms Green Trends

In this appendix C, I display some green marketing trends. One can observe that firms have established strategies in order to use their resources efficiently. The most common activities are: 3R (reduce, recycle and reuse) of inputs. With these activities, companies have enhanced its managerial as well as organizational output and these improvements may contribute directly or indirectly to their financial outcome. This is evidenced in the given figures. In fig.M1(M code for Maruti Suzuki), we are showing the per vehicle electricity consumption,(indexed to base year 2007-08).Here, in the fig.M1 we can notice that the electricity consumption per vehicle is reducing and in comparison to 2007-08, in 2013-14 reduction of 46% electricity consumption per vehicle has been achieved. Maruti Suzuki is continuously working on Alternate Fuel Technology models since 2000.This has resulted into reduction of 2.24 lakh tones of CO₂ till March 2014. In Fig M2, The Initiative taken by Maruti Suzuki India Ltd resulted into a reduction of 77% in 2013-2014 in water

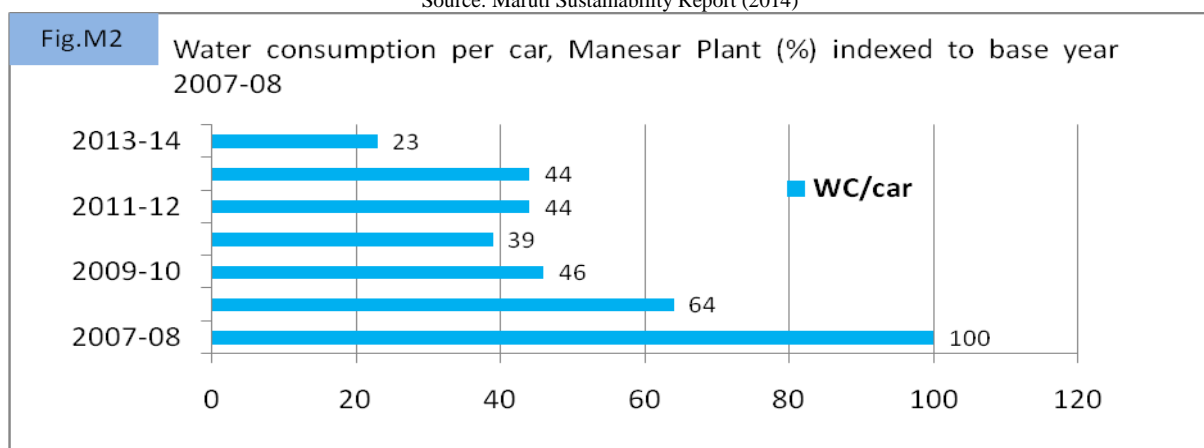
consumption per car taking the base year of 2007-2008. In fig.M3, Due to initiatives like improving fuel efficiency, reducing exhaust emissions and development of alternate fuel vehicles, we can notice a reduction of weighted average CO₂ by over 13%. In Fig.M4,we can observe that supplier plants certified for ISO 14001 (%)has reached to 85% in 2013-2014 in comparison to 32.8% in 2005-2006.It is important to note the target is to make it 100% by Dec.2014. In the given F1(F code for Ford), Hazardous waste generation per vehicle has reduced from 9.3 kg per vehicle in 2008 to 7 kg per vehicle in the year 2013. In fig F2, the worldwide facility Energy consumption per vehicle is reducing 3561Kilowatt hours per vehicle in the year2008 to 2442 Kilowatt hours per vehicle in the year 2013.In fig.F3, Worldwide Facility CO₂ Emissions per Vehicle reduced from 1.09 MT/Vehicle in 2008 to .78 MT/Vehicle in 2013. Here ,the code GM stands for General Motors It is also important to note that all manufacturing commitments given in the figures use 2010 as a base line and are working toward 2020 goals, simultaneously, it takes into account

all the manufacturing as well as nonmanufacturing unit use of energy, normalized with automobile production (correlates to the CO₂ scopes). The data incorporate figures from several GMJVs. In this figure GM1, one can observe that the Energy intensity is reducing from 2.47 MWh/vehicle in the year 2010 to 2.19 MWh/vehicle in the year 2014. In this figure, GM2 carbon emission has reduced from 0.93 metric tons CO₂e / Vehicle in 2010 to 0.83 tons CO₂e / Vehicle in 2014. This figure includes all manufacturing and nonmanufacturing facility CO₂ emissions reported in the carbon disclosure Project scope one & two categories, standardized by automobile production. The data incorporate figures from several GMJVs. In Fig. GM3 the waste generation (kg) / vehicle is reducing from 310 kg per vehicle in 2010 to 244 kg in 2014. In this figure, the generation of energy from renewable sources like solar, landfill gas and hydro based electricity can be anticipated on the basis of technology capacity factors in case definite data is unavailable. Factors of capacity are derived from the NEL (National Energy Laboratory) which is a section of Department of Energy (US). In the fig. GM4, water consumption is reducing from 4.84 m³/vehicle in 2010 to 4.31 m³/vehicle in 2014. It includes consumption of water from all the manufacturing as well as nonmanufacturing facility i.e. surface, municipal, well etc. normalized by automobile production. The data incorporate figures from several GMJVs. : The code Hu stands for Hyundai. In the fig. Hu1 the green gas emission

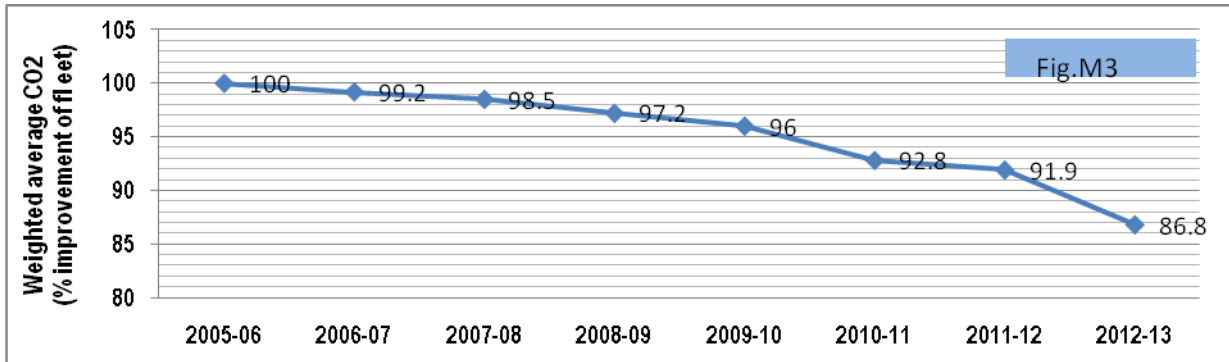
per unit of production has reduced from 0.561 tCO₂e/vehicle in 2011 to .512 tCO₂e/vehicle in 2013. Code M & M stands for Mahindra and Mahindra. In fig M&M1, It is clear that companies initiative has lead to the reduction in both total energy consumption and total water consumption in the automotive division from the earlier periods. In the fig. M&M 2 also the company shows a substantial decrease in solid waste generation, and the liquid waste generation from 2011-12 to 2013-2014. Code T stands for Tata Motors and TML for Tata Motors Limited. In the fig. T1, we can see that the consumption of direct energy /vehicle is reducing from 2,876,120 GJ in the 2011-2012 to 1,029,835 GJ in the year 2013-2014. whereas the indirect energy consumption /vehicle has reduced from 2,339,686 GJ in the year 2011-2012 to 1,541,920 GJ in 2013-2014. In fig. T2, TML RECON business turnover has increased from 1.01 INR Billion in 2011-12 to 1.30 INR Billion in 2013-14. In fig. TK1, total water usage per vehicle has decreased from 4.9 m³ /vehicle in 2011-12 to 3.74 m³/vehicle 2013-2014. The Hazardous waste generation per vehicle has reduced from 6.01 Kg's/vehicle in 2011-2012 to 4.3 Kg's/veh in 2013-14. Volatile Organic carbon emission has reduced from 40.32 gm's/m² in 2011-12 to 39.4 gm's/m² in 2013-14. In fig. TK2, Suppliers (core) compliant with ISO 14001 has increased from 78% in 2011-12 to 2013-14. The Dealership complaint with ISO 14001, increased from 70 % 2011-12 to 96% in 2013-14.



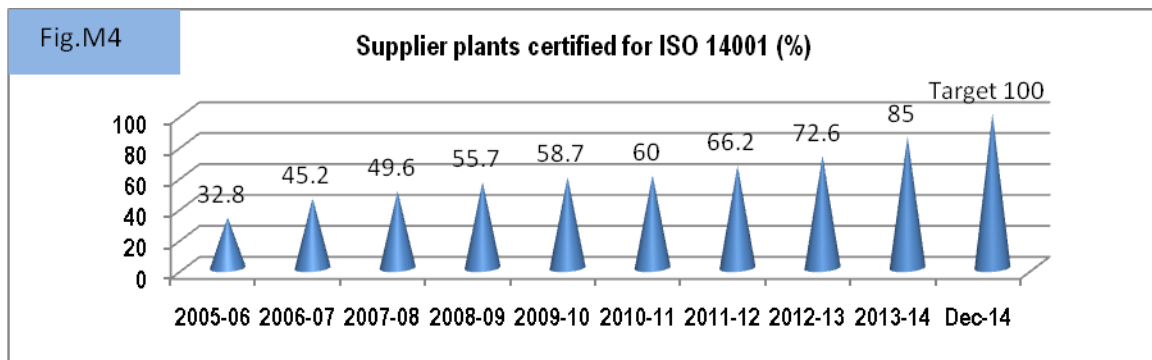
Source: Maruti Sustainability Report (2014)



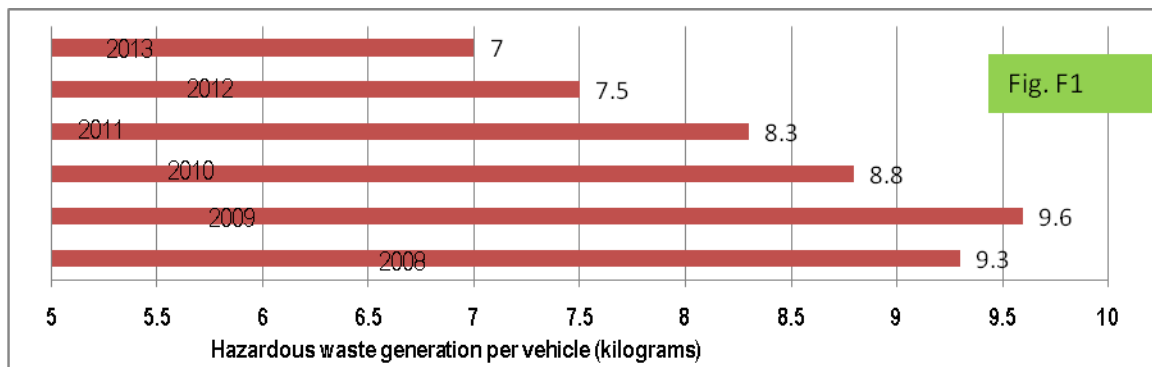
Source: Maruti Sustainability Report (2014)



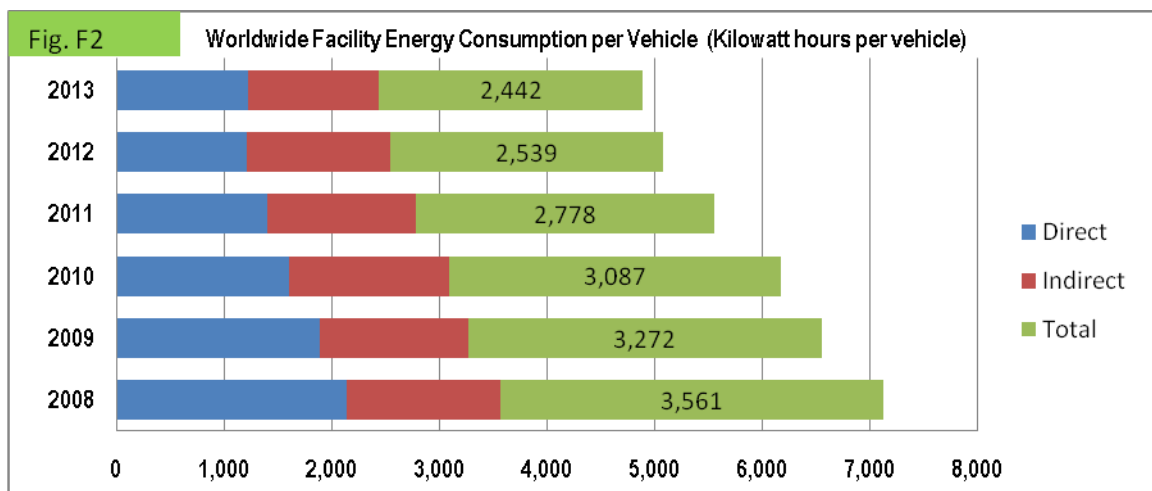
Source: Maruti Sustainability Report (2014)



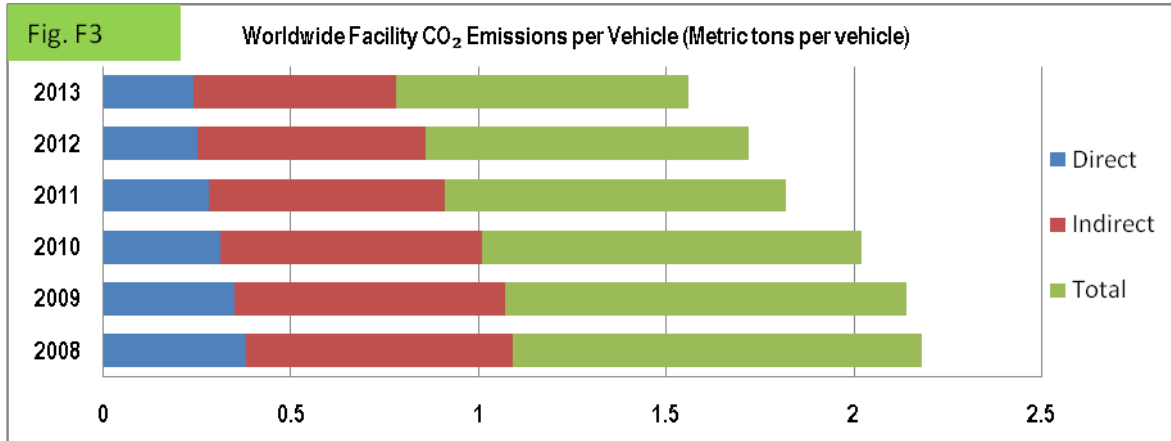
Source: Maruti Sustainability Report (2014)



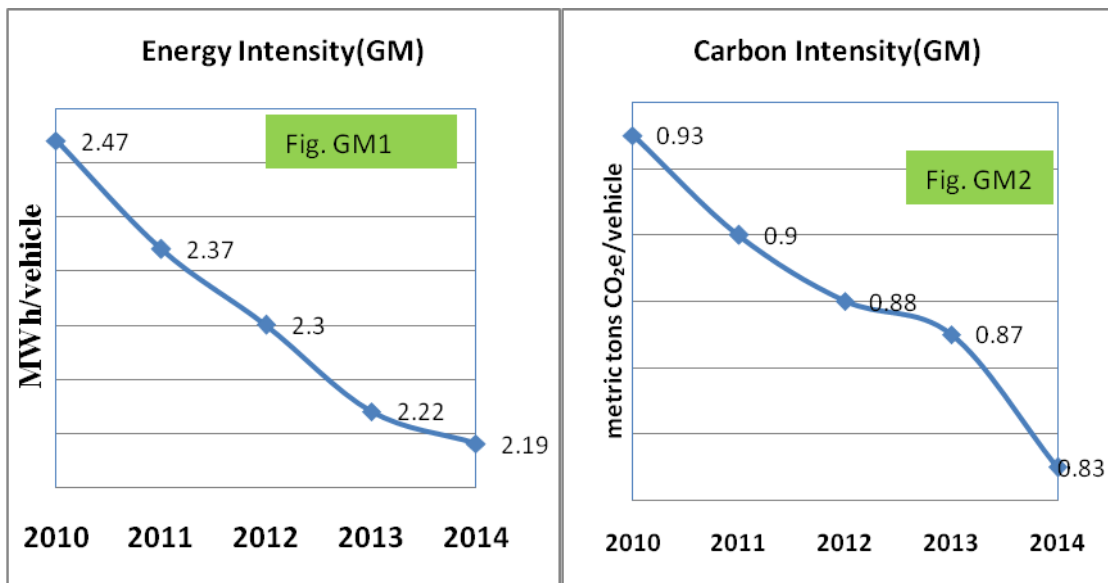
Source: Ford Sustainability Report (2014)



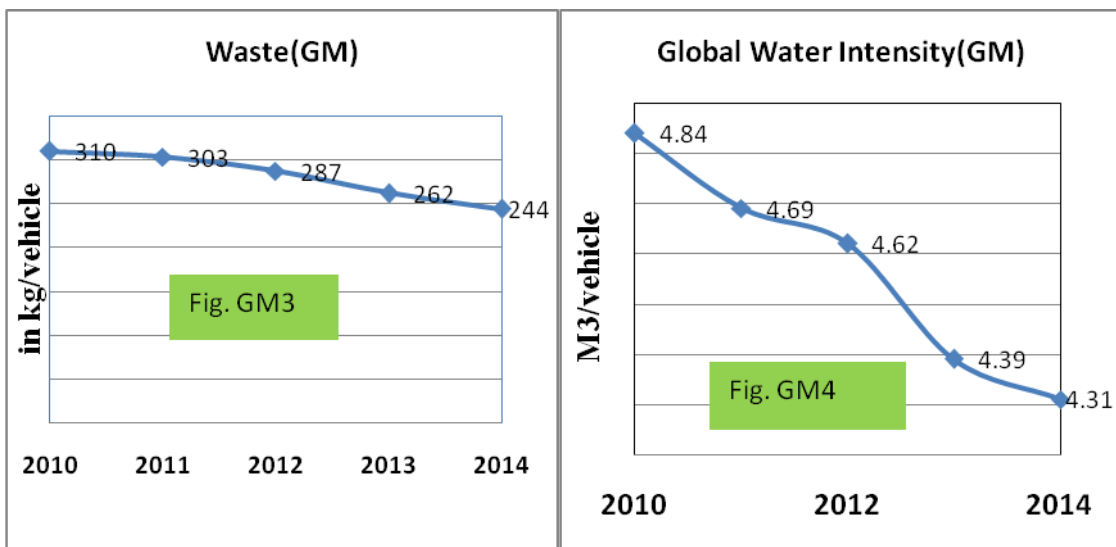
Source: Ford Sustainability Report (2014)



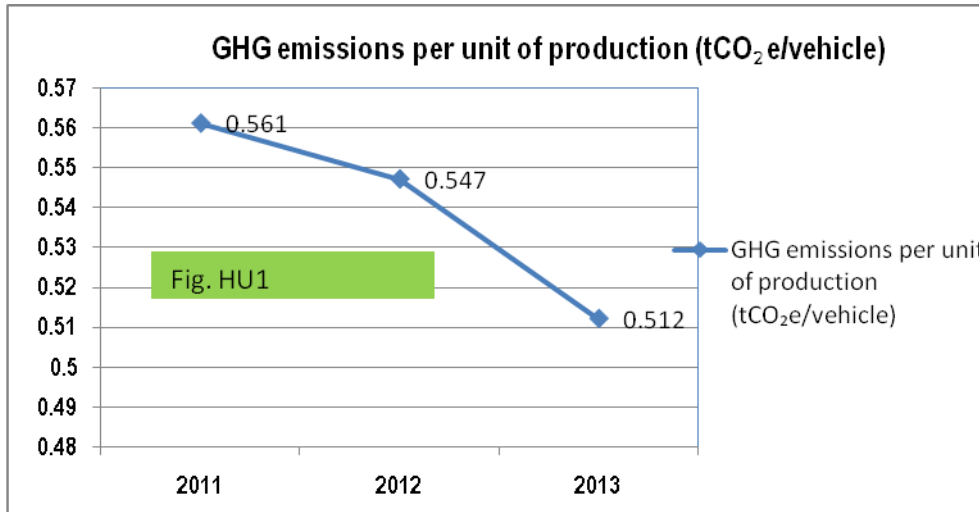
Source: Ford Sustainability Report (2014)



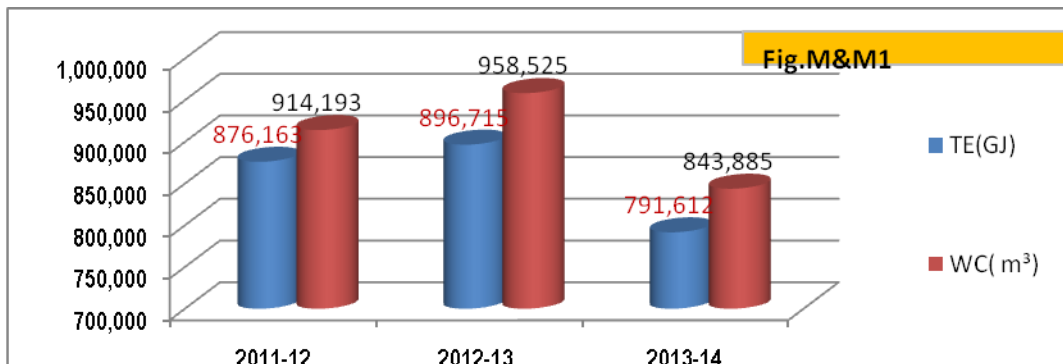
Source: GM Sustainability Report (2014)



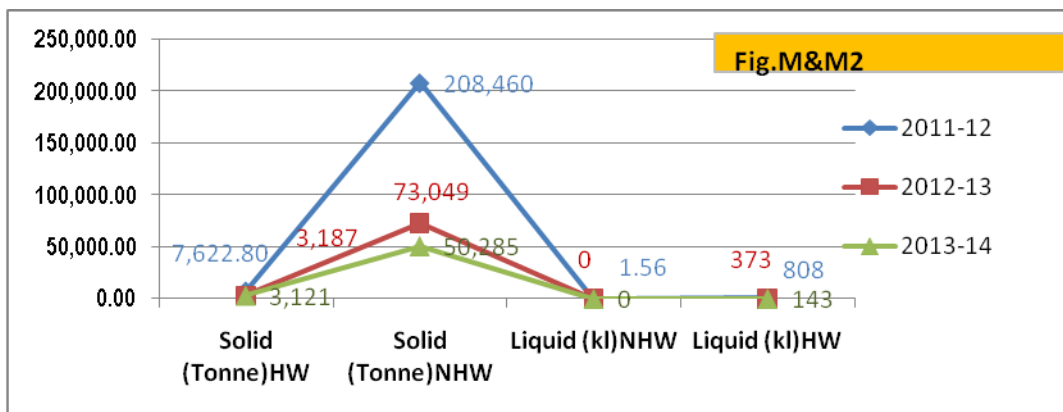
Source: GM Sustainability Report (2014)



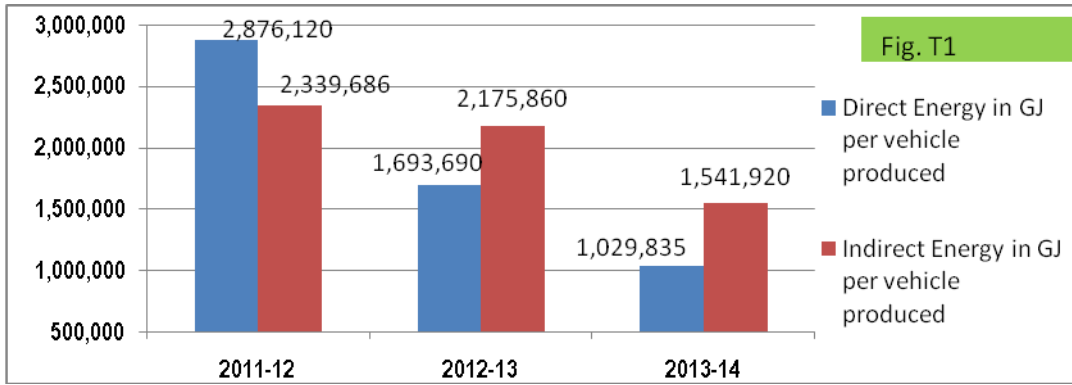
Source: HU Sustainability Report (2014)



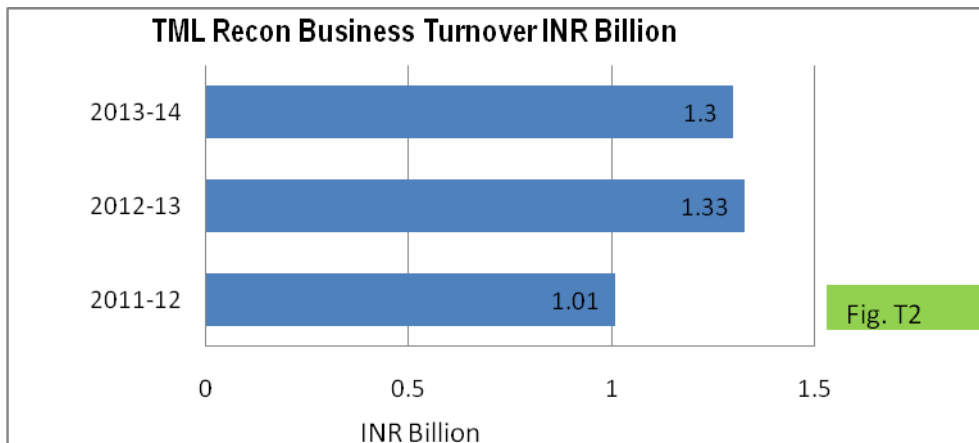
Source: M&M Sustainability Report (2014)



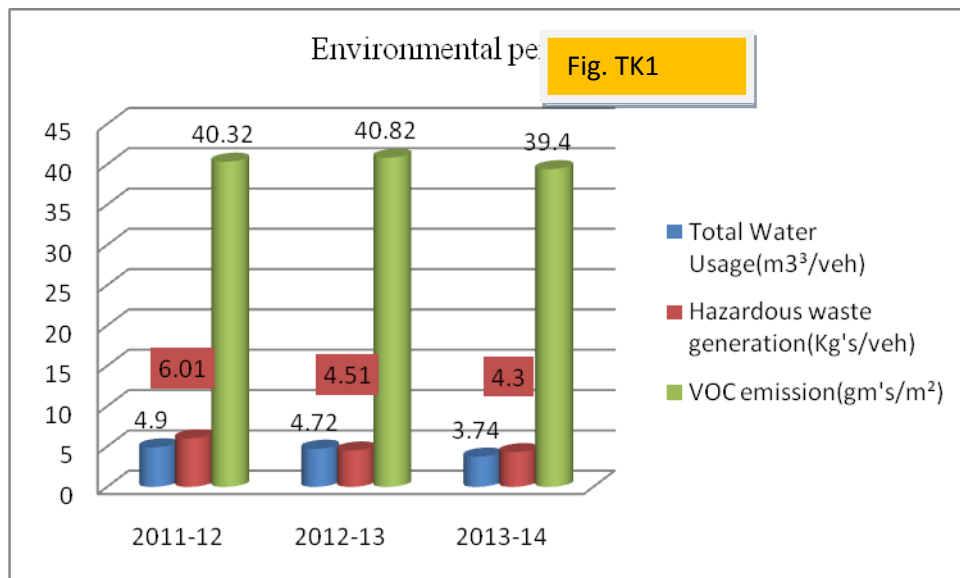
Source: M&M Sustainability Report (2014)



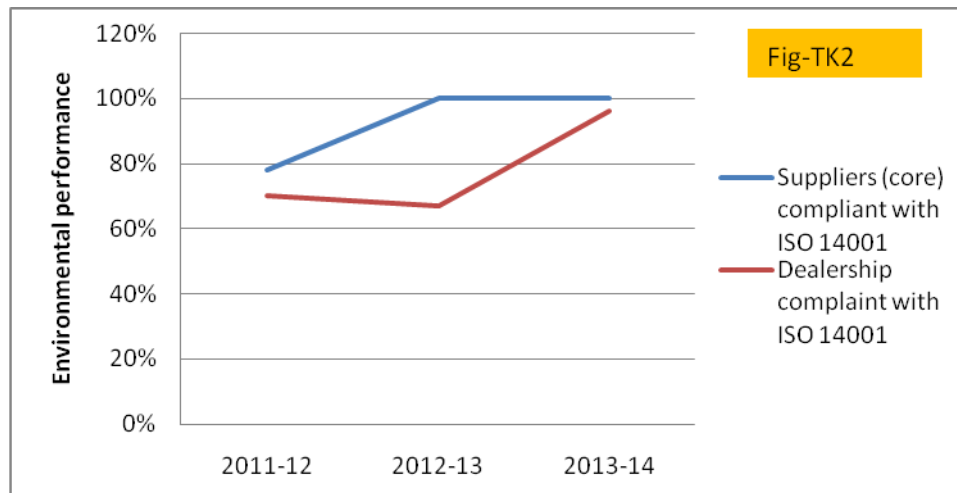
Source: Tata Sustainability Report (2014)



Source: Tata Sustainability Report (2014)



Source: TK Sustainability Report (2014)



Source: TK Sustainability Report (2014)

3.3 Analysis: - Discussions and implications of the descriptive results

With its wide impact on environment, the automotive industry has a huge pressure to adopt Green marketing strategy. I found through firm's Indian homepage (in some cases the corporate home page too.) that most of the firms are reporting their environmental friendly initiative in the sustainability report or annual report. As part of meeting the environmental policies of the firm, low CO₂ emitting cars are coming in the market. Firms are working on development of new technology and use of alternate energy like CNG to reduce the CO₂ emission. Not only the reduction in emission but the uses of alternate fuels are also helping in savings of fuel to the consumers. The combined effects of such measures are creating value for all the stakeholders. It seems that consumer green inclination, competition and directives of the government are the key forces that are driving firms to adopt green technologies as suggested by [18].

Above mentioned points indicates that by the Indian automotive firms are following the Marketing orientation concept as being defined by [19]. At the same time firms are also adopting the customer- intimacy philosophy as proposed by [20] by making offers that has instant benefit to the consumers in the form of cost saving and fuel savings. The combination of financial benefit and environment benefit as a result will boost the demand for green products and pave the way for sustainable green growth as suggested by [21]. We can find this in Maruti case which has registered 23% increase in the MSIL CNG vehicle sales during the reporting period of 2014-2015.

In terms of environmental strategies, it was possible to observe clearly that firms are combining source reduction and waste management employing the concept of green design strategy introduced by [8]. It seems that these two strategies has added value to them under the form of cost saving (see fig. T2). As for example, In the year 2013-2014, the activities aimed to reduce the waste at Toyota Kirloskar resulted in 5.3 Kg/vehicle reduction which amounts to lowering of steel consumption by 293 MT/year. This lead to a saving of nearly Rs.12, 30,600/year [22]. At Nashik automotive division in M & M, since 2009, a total

of 51 projects have been initiated at the unit which collectively saves 286345m³ of water and INR 52 lakh every year. The energy saving intervention in the plant of Mumbai helped in monetary savings INR 7.25 Lakhs per annum [23]. TML RECON business is of Rs.1.3 billion in 2014. [24]. Thus the question if green marketing strategy of firms is positively associated with increase in performance deserves an affirmative answer.

When examining the sustainable reports I noticed that all firms have an environmental plan that combine a set of goals with possible actions. In other words, by writing an environmental plan I assume that firms must have firstly identified possible weakness and strengths as well as analyzed their resources and capabilities in order to achieve the environmental objectives. Considering that most of firms adopted an environmental management system, I believe that they identified the needs to implement green facilities; green innovative capabilities and green marketing campaigns and all of them are part of their green marketing strategy. The sensitivity of firms to respond to the current green trends again confirms the theory about market-oriented firms. Therefore, it might be concluded that all driving factors such as institutional pressure, regulation, customer preferences, market pressure and management control, can explain companies' decision to adopt an Environmental Management System.

To create common culture for instance in NISSAN, based on ISO 14001 activities, the company conducts employee education rooted in NGP2016 regarding reduction of CO₂ emissions, energy and water consumption and waste [25]. In Ford, tips for Eco – driving have been made available on the website of Ford for everyone. Under the scheme of DSFL (Driving Skills for Life), Ford has been made available on the website [26]. Outside North America, GM has developed a Global Environmental Certification and Training Program that focuses on GM Environmental Principles, internal environmental performance criteria and industry best practices [27]. Hyundai is running environmental coordinator training program, Environmental workshop for production site environmental managers [28]. Toyota Kirloskar is running Eco Quiz among Managers for environmental training [22]. Thus, it

is evident to me that firms are focusing on the development of “Green capabilities” as a source of competitive advantages, in line with the theory of resource based view proposed by Prahalad and Hamel (1990)[29].

Linking green training programmes with environmental practices show the trends how sustainability is being integrated into corporate processes. All examples mentioned until now provides *support to my second research question which aim to understand whether green marketing strategy of firms is positively associated with increase in performance.*

In terms of green facilities, it seems to me that by acquiring ISO certificate or implementing EMS generate benefits for companies. In Maruti Suzuki Ltd., 72.6% tier-1suppliers certified to ISO 14001. In M & M Ltd. 50 suppliers have brought under the Assessment and green rating in 2013-2014 and target for 2014-2015 is to increase this number by another 150. In Toyota Kirloskar, 100% of Suppliers (core) are ISO 14001 compliant in the assessment year 2013-2014. In Hyundai, All the first tier suppliers have implemented ISO 14001 certification too.

Note that the movement for certification involves the whole supply chain as a trend forecasted in 1995 by Rothery [30]. This lead me to think that firms are adopting a collaborative “green” network and my analysis hinges on the holistic marketing framework set by Kotler *et al.* (2002)[31], which gives me the impression that suppliers played an important role in the environmental practices, both through their suggestions and through their involvement as partners in the early stages of green technological projects. Thus, *the affirmative that introducing environmental facilities helps firms towards green innovation is again reinforced.*

One important point to stress is about the marketing communication efforts. Internally firms are communicating, educating and encouraging green initiatives among their personal, which have resulted in increased performance via cost reduction and/or developing of new green products. Externally, all firms studied here have used sponsor events aiming to communicate and to educate drivers on environmental issue In 2013 Ford held a Personalized Fuel-Efficiency App Challenge, which resulted in creation of a range of apps to help customers optimize their personal fuel economy performance on the road and share that information with others. In 2013, Ford continued to support the ECOWILL project, which stands for Eco-Widespread Implementation for Learner Drivers and Licensed Drivers. Reaching its 25th year in 2014, GM Global Rivers Environmental Education Network (GREEN) is the longest running conservation education program by any automaker, having impacted 150,000 young people through hands-on learning since its inception in 1989. Toyota Kirloskar has launched Vehicle Switch off campaign at Traffic Signals, and Green Bus Campaign. TATA Motors is regularly doing the Tree Plantation Drive, and Promoting use of clean energy through Domestic Bio-Gas Plant. Thus green marketing communication can be an effective tool to improve corporate image. Therefore, I conclude that effective green marketing communication

affect positively corporate reputation and this respond my final research question.

In summary, regarding the trends and green strategy used by firms aligned with the research background I end up with the idea that “Go green” demands changes in positioning, logistics, strategic alliances, communication, promotion, etc. “Greening” all activities require “greening” all departments. In other words, the creating of internal facilities, organizational structure, planning and resources for developing, implementing and maintaining policy for environmental protection is worthwhile. Thus, marketing orientation can be associated with the degree of firm’s environmental practices. The most firms reinvent themselves by adopting more reuse, recycle, reduce, green training, green design, green marketing, etc more eco-oriented they seems to be. In other words, eco-market orientation will lead to more environmental practices since the latter is associated with continuous improvements in green facilities, green capabilities and green marketing strategies.

3. Limitations

With regard to the reports available on the website, there can be no doubt that these are indicating a trend however, firms may show only a set of information that, in somehow, are of their interest to present and this can lead to some bias. Some of the firms’ reporting is for certain specific markets only and are not indicating the Indian market, which restrict us to conclude something concrete. This may be due to the reason because the initiative taken for one market is not applicable in the other market. At the same the written documents too have an inherent limitation as it does not give specific answers to the specific question for that we have depend on the physical interviews.

Regarding to the interviews, the lack of data represents a weakness of my research and such very small sample did not allow me to make more profound analysis. A larger sample definitely would increase consistency and reliability. Besides limitations arising from the data set, there are also drawbacks stemming from the methodological framework employed, firstly I was interested in investigating the green trends in the India automotive industry however most of the manufacture sector is located outside of India. The idea of analyzing the India market is fundamentally good, since the country show great environmental awareness and public incentives to increase green demand of vehicles however it has been quite difficult to find companies at all having integrated marketing information that could answer my questions.

4. Summary and Conclusion

The aim of this paper is to understand whether the selected ten firms are having any environmental friendly strategy or not, at the same time these strategy encourage innovation and competitiveness or not. The investigation show that effective GMS positively affect firms’ organizational performance and this can influence their overall economic results leading towards of profits. Better utilization of the resources by means of the introducing the environmental facilities by companies certainly can facilitate them

towards environmental friendly innovation too. Thus, this study agrees with the researchers who affirm that environmental strategies positively affect firm's competitiveness while reducing environmental impact.

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