

Does csr affect the sustainable development on ford automobile manufacturing indu...

[Business](#), [Industries](#)



Introduction

An investigation concerned Cornell faculty members voted the most important of the day indicated climate change and its effects on ecosystems is the top one. (Lang, 2008) In the 2009 Copenhagen United Nations climate conference, countries discussed climate environmental problems, advocated energy saving and CO2 emission reduction. Automobile manufacturing industry significantly influences the environment. It reflected in the automotive mission, garbage collection and recycling, the expenditure of energy and environmental pollution in manufacturing process. As the third largest industry in the world, Automobile manufacturing industry has crucial status in fulfillment of corporate social responsibility (CSR). CSR indicates that companies are not only responsible for the interest of shareholders, but also responsible for the totality of their impact on people constitute its stakeholders, employees, customers, business partners, investors, suppliers and vendors, the government, and the community. Increasingly, stakeholders expect that companies should be more environmentally and socially responsible in conducting their business. As a part of CSR, the environmental responsibility has becoming the most important obligation to the automobile industry due to the current environmental issues. While within the world of business, the main "responsibility" for corporations has historically been to make money and increase shareholder value. Whether CSR conflicts with the interest of shareholder Does CSR affect the sustainable development on automobile manufacturing industry Therefore, the paper present as an investigation based on the two questions, it focuses on the effect of automobile manufacturer doing the CSR on environmental

protection. Due to the sustainable development of automobile industry is closely concerned with the corporate social environmental responsibility. Hence the research primarily demonstrates the activities that automobile manufacturer contribution for the society environment is three aspects. Enhance fuel efficiency and reduce CO2 emission, improve and develop the technology of hybrid vehicles, recycle resources and improves the utilization ratio of resources in the process of manufacture.

Background

The concept of CSR (corporate social responsibility) comes from the beginning of 20th century American research on enterprise responsibilities for its all stakeholders. CSR has become a consensus to the society all over the world. In addition to corporations undertake the economic responsibilities to stakeholders. They should consider the responsibilities apart from the stakeholders, such as the responsibilities for employees, customers, suppliers, community, the government, and the environment responsibility. Therefore, environment responsibility is a kind of CSR. It indicates that enterprises seek for the maximum economic benefits during the manufacture processes, while it also shall utilize the resources reasonable and take activities to contribute to the society for environmental protection. In the enterprise environment social responsibility theory was advanced, many international organizations also began to pay attention to these environmental problems. In 1972, the United Nations held the human environment congress in Stockholm. It established a new independent committee who published the report named our common future. This report

first introduced the sustainable development concept. After that, numerous enterprises began to respond to the sustainable development calls and establish their own environmental management mode, actively undertake environmental protection social responsibility. With the increasingly serious environmental problems, the responsibility of environment has been concerned more and more. However, corporate contributions to the environment are expected and required for a higher level.

In 1915, Americans Henry Ford launched the assembly line of car production. After that, Ford as representative auto producer therefore entered into mechanization manufacturing. Another significant paradigm was the global nature of vehicle manufacturing. Automakers started assembling vehicles around the world. This trend was accelerated in the 1990s with the construction of overseas facilities and mergers between multinational automakers. This global expansion gave automakers a greater capacity to infiltrate new markets quickly and at lower costs. Henceforth, the world automobile production started rapid increase, and in late 1999, world car quantities rose to 7.7 million cars. What's more that number is still rapid growth so far. Every coin has two sides, besides it brings to humankind remarkable convenient life and promote the world wide manufacture industry, vehicle also cause our environment great damage and pollution, such as acid rain and photochemical smog, ozone depletion, lead poisoning, the greenhouse effect, the city voice, etc. On the other hand, the evolution of the automotive industry has been influenced by various innovations in fuels, vehicle components, societal infrastructure, and manufacturing

practices, as well as changes in markets, suppliers and business structures. However, the most important issue is environment pollution. The emission pollutants only cause the global warming, but also seriously threaten the healthy life of human beings. Furthermore, the consumption of automobiles has a great effect on the finite resources sustainable utilization. As a very important part of the manufacturing industry, automobile manufacturing industry concerns a variety of relevant manufacturers. Accordingly, it becomes an industrial chain; therefore, both the motor producer and relevant suppliers are responsible for the environmental problems.

The concept of sustainable development first appeared in 1987: "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."— From the World Commission on Environment and Development's report *Our Common Future*. (What is Sustainable Development) This definition is widely accepted at the 1992 United Nations conference on environment and development. Sustainable development does not have an exact standard, instead, it has three targets. It aims to promote economic development first. Besides, development cannot exceed the carrying capacity of resources and the environment. The final objective is to improve people's quality of life and create a prosperous society. In the automobile manufacturing industry, sustainable development means co-existing with communities and the global environment. Because vehicles play a dominant role as a transport tool, they have no alternative at present; they will therefore exist for a long time until new transportation takes their place. Because of their irreplaceable function in

logistics and transportation, environmental protection is needful to automobile industry achieve sustainable development.

Methodology

The paper is based on the secondary data. For the first part of this paper, the data are collected from the Ford corporate official website. It presents as sustainable reports. The data contains 10 years of sustainable report. There are figures and graphics including in the reports. For the second part of this paper, the data is collected on the TOYOTA global corporate social responsibility report for the 2010. What's more, other company's similar product data is also collected. The data is also figure and graphic in the report. For the last part, the data mainly collect from both this two company's reports. However, there are also some data from other company collected on the website.

To the first part, search for the key information in the 10 years reports at first. Then the paper develops some questions to the ten years quantitative data. Next according to the answer of questions it analysis the changes of figures and get the primary result. Make an assumption for the primary result. At last, compare with the financial statement and test the result.

To the second part, the specified data are collected for a case study. The case study focuses on a type of product of TOYOTA. Next the data are compared with other kind of product and same type but different company. Then raise some questions and analysis the data or information. At last

through the financial statement and other standard tests the result which comes from the answer of questions.

To the third part, collect the similar type of data from the 3 corporate reports firstly. Undertake the research and analysis the data. Then create an output based on the analysis. Next go back to the report to have a review. At last evaluate the output and make the final conclusion.

Main body

Challenges in sustainable mobility and encouraging energy source diversity

In general, the automobile faces these challenges in adapting to the global environment:

Reducing CO2 emissions to help prevent global warming

Encouraging the need for energy source diversity

Preventing air pollution

With regard to energy source diversity, gasoline is expected to remain the primary resource for the time being. Accordingly for gasoline and diesel powered vehicles, solutions are under way that focus on improving fuel efficiency, including reducing vehicle size and weight, redesigning power trains and introducing hybrid technologies. (Toyota motor corporation, 2010)

Against the background of climate change, the increasingly difficult availability of energy and tighter emission regulations, the industry will have to spend billions in R&D (research and development) for sustainable individual mobility, said Klaus Draeger, who is responsible for R&D in the management board of car maker BMW AG, in his initial lecture. Emission

reduction and fuel shortage, these two factors have the top priority in the industry, but they are not the only hurdles to overcome. “ While the list of challenges is almost shocking, companies which refuse to change will face hard times or even disappear,” the BMW top developer said. (Automotive industry faces sustainability challenge, 2008) Therefore, automobile manufacture industry is indispensable for emission reduction and increase fuel efficiency.

Section one: Reducing CO2 emission and increase fuel efficiency

An overview of the issues of global warming and CO2 emission

Global energy consumption and CO2 emissions are said to be a cause of global warming, which have been steadily increasing since the Industrial Revolution. Global warming, which is the increase in global average temperature in the course of the twentieth century, is mostly due to the increase of atmospheric greenhouse gas (GHG) concentrations caused by human activity; these anthropogenic emissions have increased by 70 per cent between 1970 and 2004 (Intergovernmental Panel on Climate Change 4th Assessment Report) The resulting climate changes and the adverse affects this has on ecosystems and human living environments is cause for concern. The need to significantly reduce greenhouse gases on a global basis, to slow the rise in average temperature and keep it within 2 degrees centigrade of pre-industrial era levels, was affirmed a long-term goal at COP15 held in Copenhagen in December 2009. (COP15 for journalists: a guide to the UN climate change summit, Nov 2009) Since approximately 20%

of the world's total CO₂ emissions from energy sources are generated by the transportation sector, reducing CO₂ emissions is an extremely important issue that the automobile industry must address. Automobile manufacture corporations are accordingly under way to take appropriate and persistent action on energy and global warming issues for medium to long term.

Global approach to fuel economy:

For the environmental pollution problems caused by vehicle emissions, had aroused widespread concern over the world developed country in the early 1970s. It consequently promoted countries to formulate automotive emission regulations and fuel taxation. Many countries use fuel taxation and emission regulations to decrease dependence on fossil fuels reduce resources consumption and air pollution. With the increasing standard, the control of vehicle pollution emission becomes more and more stringent. The control of pollutants from the initial CO, HC and NO_x already extend to the PM, particulate, sulfur, benzene etc. (DELPHI, 2010-2011) Current regulations on CO₂ emission values adopted in EU, Japan, USA, and Canada are already quite strong. EU and Japan are frontrunners in setting examples related to the fuel economy regulations and standards for the rest of the world. It is obvious that without strict regulations there will be no decrease of CO₂ emissions from transport, while regulations force vehicle efficiency improvements equal to 2-3% per year. Correspondingly to the increasing standard of emission, fuel taxation is constantly changing and has risen steadily over the since the establishment. It is considered a good way of the government making money and also to help protect the environment by

discouraging people from using their cars. On account of the achievements on environment after the establishment of emission standard and fuel taxation, the sustainable development is not contradictory. Instead, only strengthen environmental protection can realize the sustainable development of the auto industry.

Vehicles sales tendency and fuel economy:

For all kinds of vehicles the logic that the larger the engine the larger fuel consumption is a common view. There is a significant difference in engine size around the world, the engines from Japan has a distinct contrast to the USA. Most of engines made by Japan a small (under 1500 cc fuel consumption of the engine) instead they are dominantly large in the USA. However, there is a case related to vehicles sales between General Motors and Toyota, which indicates the tendency of cars purchase. As a result, Toyota surpasses GM in global auto sales in 2006. General Motors has held the number-one spot in vehicle sales for every year since 1931. From 1931 to 2005, GM are absolute the top automobile enterprise groups.

Nevertheless, Toyota take its place since 2006, which partial owns to the sustainable development concept of Toyota. (White, 2007) Moreover, Toyota has long beaten GM in profitability, racking up record profits for the past four years, with \$11.8 billion profit for the fiscal year through March 2006. GM lost \$2 billion last year. Toyota's fuel-efficient cars, such as the Corolla, Yaris and gas-electric hybrid Prius, are big hits because of surging gas prices. General Motors, meanwhile, has been forced to scale back production in some regions to tackle a turnaround " Toyota sales are booming because of

its good image around the world about reliability and ecological technology,” he said. “ It’s just the opposite for GM, and its image is deteriorating.”

(Toyota overtakes GM in global vehicle sales, 2007) Furthermore, in January 2005, Toyota announced the Contribution towards sustainable development, an interpretation of the guiding principles at Toyota that takes into consideration Toyota’s relations with stakeholders. This was revised in August 2008 to become the CSR policy: contribution toward sustainable development to take into account subsequent environmental changes and heightened societal interest in CSR. (Toyota) As to this case, it indicates that contributions in CSR promote the sustainable development.

The Evolution of Crude Oil Prices and fuel efficiency

Gasoline and diesel are made from crude oil; they are treated as the dominating power for the motor cars. The price of crude oil has great influence to the automobile industry. The price gradually grew up from nearly \$10 per barrel in 1970 to \$40 per barrel in 2004. (See appendix) Oil ministers from producers’ group OPEC (Organization of Petroleum Exporting Countries) have expressed their support of an imminent reduction in production levels in 2004. (Opec moves to reduce production, 2006) The price therefore increased rapidly, it hits an all-time high above \$147 a barrel on July 3 2008. Accordingly the issues of the fuel economy are increasingly concerned by various industries in worldwide. Automobile industry is regarded as one of the most consumption industries; the increase of oil price has dominating influence on the automobile producers. Based on the responds on the auto sales market, it is necessary for the automobile

manufacturers to pay attention to the fuel economy problems. As mentioned above, Toyota surpassed the GM in worldwide auto sales, which indicated the importance of increase fuel efficiency in auto industry sustainable development. The issue of oil price increase promotes auto manufacturers to make energy efficiency vehicle. However, assume the oil price stay the same, whether auto makers are willing to enhance fuel economy The answer is a resounding yes, for instance, a vehicle can drive 15 miles per gallon (MPG) gasoline versus a 20 MPG one; it is obvious for people to choose the higher MPG automobile. For this reason, auto manufacturers are willing to produce higher level MPG vehicles. In other words, auto manufacturers actively seek depend on energy economy vehicles make more competitiveness. In addition, auto producers should concern with the issue of emission pollution meanwhile manufacture the energy economy vehicles. On the other side, the fuel economy standard established by NHTSA (National Highway Traffic Safety Administration) conflicts the MPG of vehicles. On account of the standard, auto manufacturers have to enhance fuel efficiency. As a result, fuel economy of vehicles grows up by the contribution of auto manufacturers, fuel economy standard and issue of increased oil prices.

Fuel economy technologies and eco-driving concept:

High fuel efficiency was achieved by advances in technologies, modification of engines and adaptation of the law on vehicle improvements. There are different methods to enhance fuel efficiency in worldwide, which are including use of tires with low rolling resistance, improved aerodynamics, decreased vehicle weight or size and energy efficiency of electric

components. The development of power train technologies is based on the advanced internal combustion engines and introduction of innovative technologies, including hybrid, electric, hydrogen and fuel cells engines is necessary. So far, the hybrid engines combined with electric technologies have achieved a 50% raise in the fuel economy since introduced. Besides, vehicles in all weight categories need to be designed to meet the fuel efficiency standard. By contrast hydrogen engines are able to achieve the improvement as well, yet they are more expensive than the electric. Due to the CO₂ emissions in real world from driving are 33% higher than tested CO₂ emissions due to the use of air-conditioning, aggressive driving methods and poor traffic conditions. Behavior changes such as acting on driving style (eco-driving) is deemed to be a significant potential way to lower the CO₂ emissions.

Eco-driving means smarter and more fuel-efficient driving. The eco-driving process is constituted by 4 simple steps:

Plugged the USB stick into the vehicle at beginning of journey

During the journey, USB stick record the driving data

Plugged the USB stick into computer when back to home; then the eco driving application analysis the collected data.

Eco driving system analyses driving behavior and advises on improvement, focusing on four key areas: acceleration, gear changes, average speed and deceleration.

Eco-driving is a way of driving that reduces fuel consumption, greenhouse gas emissions and accident rates. Eco-driving is about driving in a style suited to modern engine technology: smart, smooth and safe driving techniques that lead to average fuel savings of 5-10%. The performance on early gear changes, efficient deceleration and steady average speed, which contributes to a more efficiently engine running and lower fuel consumption. Meanwhile smooth acceleration reduces fuel consumption, noise and noxious emissions. (See appendix Figure 3: Contribution to total eco-driving changes) As an important component of sustainable mobility, eco-driving considerably contributes to climate protection and pollution reduction (the concept of eco-driving) Introduction of Eco-driving concept reflects that automobile manufacturers are seeking for any available approach to sustainable development. They are under way to reach expanded use of eco drive indicator and eco mode to help drivers learn about environmentally considerate driving. Therefore, performances on CSR have a positive effect on sustainable development of automobile corporations.

CO2 emission perspective and development of Electric hybrid vehicles technology

The CO2 emission level is quite different in various regions worldwide. USA and Canada present an advance of CO2 emissions from road transport comparatively to 1990-2007 emission levels, with the largest increase (40.31%) in Canada. Throughout the entire 27 countries in Europe, total CO2 emissions have decreased by 7.17% from 1990-2007. However, consistent with other large economies such as Russia, USA and Canada, road transport CO2 emissions over the same year period have grew up to 28.31%. To make

sure a decrease in the transport related CO₂ emissions in future, it is essential that countries import or produce cleaner vehicles, use low-sulphur and unleaded fuels, and increase the turn-over rate of their ageing vehicle fleet. Of total transport CO₂ emissions in all countries surveyed, road transport contributed the vast majority of greenhouse gas emissions to the sector. Moreover, the figures (See appendix figure 4) show North America will continue to be the largest CO₂ emissions region with increases year by year. Developing countries such as China has well advance in auto industry which gives rise to further CO₂ emissions. Instead, Europe and Pacific area stay steady or even a decrease to the 2050. (World Business Council for Sustainable Development, 2010)

The issues of global warming and greenhouse gas are regard as the two main reasons which lead to introduce of hybrid vehicle. A hybrid electric vehicle is defined as a type of hybrid vehicle either electric vehicle which combines a conventional internal combustion engine propulsion system with an electric propulsion system. The presence of the electric power train is intended to achieve either better fuel economy than a conventional vehicle, or better performance. Fossil fuels are still the majority power for the cars at present; while the fuels sources are limited utilization for human beings. Therefore, it is very necessary to respond to the need for alternative fuels efforts to conserve existing oil resources. There are a variety of alternative fuel candidates, including bio fuels, natural gas, electric power and hydrogen. It is necessary to take a range of factors into account in order to determine which source to choose. According to electric power can generate

various primary energy sources from sunlight, hydraulic power and other renewable and clean energy. As the most familiar power to people, electric power is applied in a large amount of fields. It is also considered to be convenient and low cost energy. Moreover, it is easily supplied for automobile use. Electric power therefore becomes a very promising energy source among many alternatives.

A case research on Toyota hybrid vehicles:

Background:

In 1993, large and luxurious vehicles were still prized. Toyota made itself a question: "Can vehicles in the upcoming twenty-first century remain the same as they have been up to now?" It was during this time, when the term "hybrid" was not yet in common use, Toyota launched a project to investigate what type of vehicles would be best. However, a short time later, global environmental issues including global warming and the limits of fossil fuels became increasingly prominent. Accordingly hybrid system is one of the responses to those serious problems. The precise symbol of this approach is the Prius, which is known as the representative hybrid vehicle. (Toyota)

Achievements of Toyota Prius and impacts on automobile industry:

Toyota Prius is the world's top selling hybrid car, with cumulative global sales of 2.2 million. It account for 72% in 3.03 million hybrid vehicles worldwide since 1997 when Toyota first rolled out the Prius in Japan. (Rybold, 2011)

Accumulated CO2 reduction from 1997 to 2010, with 2.5 million hybrid vehicles by Toyota reached about 14 million tons of emission. Besides, the figure demonstrates the contributions to reduce CO2 emissions growing up rapidly. The prominent development of Prius was based on the distinguished R&D and sensible sustainable concept. Toyota has adopted a sustainable mobility concept seeking ultimate eco-vehicle that vehicles coexist harmoniously long into the future. In addition, Prius technology that controls the hybrid system achieves excellent energy efficiency and low fuel consumption. The achievement on Toyota Prius sets a good example to other auto manufacturers. It not only gear up the technology of hybrid vehicles, but also encourage the auto manufacture industry towards an advanced field.

Summing-up:

Achievement on Toyota Prius leads the evolution of hybrid vehicles in automobile industry. Moreover, it coalesces the concept of environment protection and sustainable development, meanwhile demonstrates doing CSR in favor of sustainable development.

Automobile recycling

Vehicle recycling is the dismantling of vehicles for spare parts. At the end of their useful life, vehicles have value as a source of spare parts and this has created a vehicle dismantling industry. According to the alliance of automobile manufacturers and recycling industry, cars become one of the most recycled consumer items. Approximately 82 percent of an average

vehicle's weight gets recycled. Automakers often manufacture recycled materials into new vehicles; however recycled materials are used in the production process in recent years. Since vehicles recycling industry is considered as an essential partner to auto industry, which promotes sustainable development. To the auto manufacturer industries, they reduced resources use in process of manufacture, for instance, GM decreased water use of 35% from 2005 to 2009. Components of vehicles are divided into more than 10 parts for recycling in UK. Ferrous metal account for almost 70 %, plastics and non-ferrous metals each occupies about 10%. Others take few such as electrical parts, glass, tires and rubber etc. (Vehicle Recycling & The Environment) for this reason, auto producers are needful consult details on components recycling with recycling companies, which makes sense on efficient recycling and reuse in produce process. Meanwhile, increase in utilization of raw material and energy, recyclable productions, high efficient recycling of components, these factors active sustainable development in auto manufacture industry.

On the other side, with the increasing number of end of life vehicles every year, in 1997, the European Commission adopted an instance for a directive with the propose of making vehicle dismantling and recycling more environmentally friendly, sets clear quantified targets for reuse, recycling and recovery of vehicles and their components and pushes producers to manufacture new vehicles also with a view to their recyclability. This legislation was officially adopted by the EP and Council in 2000, and it was improved to a secondary legislation in 2002. (End of Life Vehicles) ELV

legislation had good effect on old vehicle resources squander away until the end of its life. However, second hand vehicle is a kind of automobile industry derivative; they are also an important sector for sustainable development.

Conclusion:

One of the most popular climate changes, global warming leads the greenhouse gas emissions to the top topic in worldwide at the time being. Accordingly, public responds to take action for environmental protecting. As a significant part of CSR, protect environment giving rise to the establishment of sustainable development project. Automobile manufacture as the third largest industry has great responsibility on the present climate issues. The CSR concept aroused automobile manufacturers making contribution to environment sustainable development consciously. The automotive emission regulations and fuel taxation succeed in restrict automobiles

Integrated approach will achieve the best results if cooperation of all stakeholders, including fuel makers, vehicle suppliers and consumers through joint activities on the global level will take place.