Sustainable Development for Automobile Industry

Dr. S. Beulah Mabel
Faculty of Fatima College, Madurai, India

Introduction:
Sustainable Development is defined as development that satisfies the needs of the present without compromising the ability of future generations to satisfy theirs. Sustainable development implies the fulfillment of several conditions: preserving the overall balance, respect for the environment, and preventing the exhaustion of natural resources. Competition in the automotive industry is characterized by overcapacity, high market saturation, high labour and fixed costs, and the need for constant product development and innovation. Due to mergers, very few global players dominate the automotive market, causing major entry barriers. Owing to a high motorization rate, demand is largely based on replacement. This has led to a dramatically shortened product life cycle and to constantly differentiating brands and models. Slim margins press automakers to pay more attention to after-sales services to improve profitability. From the environmental point of view, the crucial issue is a relatively long life span of the industry’s products. Thus, about 80% of environmental impacts stem from the usage phase of the Vehicle. This offers room for improvement, especially in the design phase (using lightweight materials, improving fuel efficiency, inventing new energy sources). Due to the mass use of Vehicles and their shortening life cycle, end-of-life vehicle is also perceived as an important issue.

Key Sustainable Mobility Challenges & Priorities in India

<table>
<thead>
<tr>
<th>Societal / economic growth</th>
<th>Infrastructure concerns</th>
<th>Energy demand</th>
<th>Regulatory Issues</th>
<th>Technology lag</th>
<th>Consumer issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Major challenges of poverty, poor public health, and basic education</td>
<td>1. Narrow road system and inadequate parking infrastructure</td>
<td>1. Need for clean and stable fuel and energy options</td>
<td>1. Challenge of having a voice on international stage while balancing industry and regional government resistance to aggressive climate policy</td>
<td>1. Majority of population without formal access to electricity for basic needs</td>
<td>1. Rapid motorization and demand for personal transport</td>
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<td>2. Spinning population growth and density</td>
<td>2. Inadequate infrastructure for high volume of pedestrians</td>
<td>2. Need to support energy needs of major infrastructure projects</td>
<td>2. Presently the world’s 5th largest emitter of GHGs – emissions expected to more than triple by 2030</td>
<td>2. Many vehicles on the road are quite old, inefficient, and/or in poor repair</td>
<td>2. Undeveloped consumer awareness and demand for ecofriendly vehicles</td>
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<td>3. Major mobility divide</td>
<td>3. Erratic driver and pedestrian behavior plus weak emergency response system yields world’s highest rate of road deaths</td>
<td>3. Insufficient energy supply for present population compounded by explosive demand rise as population grows</td>
<td>3. High cost of technology development</td>
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<td>4. Poor air quality and increasing noise pollution</td>
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Today the global auto industry’s sharpest sustainability focus is on attaining target vehicle attributes for fuel economy and emissions.

Greener vehicles are only a first step in what must necessarily be a much more broadly conceived and deeply implemented set of goals.

Ecological innovation - employment: Technological innovations aiming at improving ecological sustainability have effects on the value chain and can cause employment losses in some parts of the automobile industry and in other industries linked to automobile production. However, they can also create new products and employment (e.g. fuel cell).

Ecological innovation - regional development: Ecological innovations can change the competences required in the development and production of automobiles and cause a restructuring of value chains and automobile production regions. Do traditional automobile regions profit from the orientation on ecological sustainability due to their


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technological capabilities? How can regional policy create synergies between ecological innovation and regional development?

Ecological innovation - consumers’ demand: The ecological sustainability can collide with the consumers’ preferences for size, speed and price, though there are activities for and signs of a change of preferences. Thus, the companies have to solve conflicts between ecological goals and product policy requirements. They can choose an active approach aiming at developing new markets or remain passive.

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<tr>
<th>Environmental issues in the automotive industry</th>
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<td>Green buildings, eco-design, green supply chains, green manufacturing, reverse logistics, innovation</td>
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<td>Packaging and waste reduction, eco-friendly processes and products in the supply chain, raw material decrease, reuse of material</td>
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<td>CO2 emissions of vehicles, affordable mobility</td>
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<td>Reduction of air emissions, waste water and solid wastes, decrease in consumption of hazardous/harmful/toxic materials, decrease in frequency for environmental accidents</td>
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<td>GHG emissions from vehicles</td>
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<td>End of Life Vehicle</td>
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<td>Factors stimulating radical technological change (new entries, external shocks or crises, performance of the new technology, market changes and industry competition)</td>
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<tr>
<td>Vehicle life cycle</td>
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10 Sustainable Business Practices

1. Printing Less Stuff = Using Less Paper

Paper makes up about 35% of our waste stream – even though it’s one of the easiest materials to re-use and recycle! You can help reduce this waste by using as little paper as possible, and being smart about the paper you do use. First of all, you don’t need to print every e-mail. Just organize your inbox to make e-mails easier to find and reference. You can encourage others not to print your e-mails as well. Make back-up copies of important files and e-mails and keep them on an external drive, instead of storing boxes of paper files. When you do need to print important documents, make sure you use a sustainable paper, and set your printer or copier to print on both sides of the page.

2. Go Digital with Your Documents

A great way to reduce paper use and get contracts and documents signed more quickly is to use electronic signatures. Adobe Acrobat Professional allows you to sign PDF files digitally, as well as create PDF documents with signature fields for clients to sign. Or you could use software such as DocuSign or e-signature to securely sign documents and get signatures from clients and vendors. Use PayPal to send invoices, which gives me the ability to accept credit cards and receive instant payment.

3. Pull that Plug

You aren’t working all hours of the night (at least I hope not), so why does your computer need to be on? Turn off everything you possibly can before you leave the office each day. I plug my computer, printer, external hard drive, and other office gadgets into one power strip, so I can just turn it off to make sure none of my appliances are secretly pilfering energy. I also program my computer to turn off automatically at a certain time each night, just in case I forget. You can also set your monitor to turn off after a few minutes of inactivity. And never leave things like cell phone chargers plugged in when you’re not using them. They still draw energy, regardless of whether there’s anything plugged into them. Speaking of energy efficiency, make sure you stock your office with energy-saving appliances and compact fluorescent light bulbs.

4. Get Waste Wise

Recycling is never a chore when it’s easier than throwing something away. Place paper recycling bins in convenient locations all over the office, like right next to copiers and mail boxes. Keep clearly labeled bins in several central locations such as break rooms. Everywhere there is a trash can, there should be a recycling bin. If you have a cafeteria or break room in your office, consider adding a compost bin. An employee or neighbor with a garden wouldn’t mind the free plant food, and worm bins are compact with very little odor.
5. Work With Like-Minded Companies

Chances are, there are businesses in your area that are also going green or certified green. Network with them and use their services when you need them. Part of being a green business is making sure that you do your best to ensure that your supply chain is green, too. Seek out green vendors for your business needs, whether it be printing business cards, hosting your web site, or cleaning your office building.

6. One Word: Freecycle!

Need some shelves for your office and don’t have a budget for new furnishings? You never know what you might find on freecycle. One person’s junk is definitely another’s treasure. If you have a large company, you could even organize an office-wide barter party, where everyone brings items they don’t use any more to swap for things they might need from others. When you upgrade your office equipment after years of use, pass it on if it’s still useful. List it on freecycle or donate it to a charity that may need it.

7. Institute a Company Recycling Program for Electronics

In addition to recycling the usual paper, cans, and bottles in the office, don’t forget about the e-waste that is so essential to businesses and so toxic to the environment. When old electronic equipment finally bites the dust, don’t just toss it, but make it company policy to recycle everything you can. Recycling for Charities makes recycling e-waste like cell phones, cameras, and palm pilots a breeze – and you can choose which charity gets the proceeds from your recycled electronics! Many computer manufacturers offer take-back programs for old computers, so make use of them.

8. Slow the Flow of Junk Mail

Junk mail may be one of the most wasteful things known to man. When the plague of unwanted mailings seems to never end, there is something you can do about it. There are free services out there that will remove you from mailing lists, and you can also remove your name from the Direct Marketing Association’s member prospect list.

9. Build Your Office Green from the Floor Up

If you’re lucky enough to be able to afford an office remodel, go green from the floor to the skylights. Use eco-friendly flooring options made from renewable or recycled materials. Use sustainable fabrics made from hemp or bamboo for window coverings, or get them second hand. Lengths of bamboo make great curtain rods, too. Get lots of green building ideas at Green Building Elements.

10. Educate Yourself

There is always more you can do to make your business more sustainable. And the only way to make progress is to know where you’re headed. Keep up with environmental news and green business trends to identify areas you can improve on. Make your own checklist of green business practices to implement and set deadlines for crossing them off your list. Share green news and tips with your co-workers, employees, and clients. Making yourself an “expert” on sustainability will not only build your green brand, but it will earn respect from potential clients, customers, and your peers. Of course I’m biased, but I can’t think of a better resource than Ecopreneurist for green business tips, so check back often to learn how to keep your business on the path to sustainability.

Auto Industry Trends

- Reduction in fuel consumption and greenhouse gas emissions
- Reduced vehicle weight through smart design and material selection
- Reduced vehicle rolling resistance and aero drag
- Downsized and boosted DI gasoline engines
- Increased levels of vehicle electrification
- Range and cost of EVs
- Alternative fuels
- Alternative propulsion systems
- Reduced vehicle energy consumption
- Crash avoidance
- Vehicle connectivity
- Renewable/sustainable materials
- Recyclable materials
- Reduced waste to landfills
- Biobased materials

Requirements for Use of Biomaterials in Automotive Applications

Six elements are required for evaluation of automotive materials:

1. Safety
2. Quality and Performance
3. Mass Reduction
4. Cost
5. Reduction of Environmental Impacts
6. Global and Regional Feedstock Availability Factor

Trends and Future Prospects

The future of the automotive sector will be basically shaped by economic recovery, new software technologies, electric vehicles or other alternative energy propulsion possibilities, and an economic shift toward Asian markets. It is also expected that the automobile industry will be forced to tackle spatial problems like parking and congestion, especially in urban areas.

- As a result of economic recovery and corporate confidence, a growing demand for company vehicles will be expected.
- Illustrating the economic point of view, there will be a change toward more global operations. That
means that vehicle manufacturers and suppliers may increase their production volume and merge with or acquire other vehicle manufacturers. An example of this phenomenon is the merger between Chrysler and Daimler.

- To remain competitive, vehicle manufacturers and suppliers should continue to reduce product development time and need in order to improve their performance and production.
- The idea of a tailor-made or individualized vehicle to respond to consumers’ demands. Rapid manufacturing technologies allow the possibility to shape and style the components of a vehicle which then should be perfectly matched to the consumers’ wishes for “comparable” prices.

Reference

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