SCIENCE AND ENVIRONMENT FORTNIGHTLY

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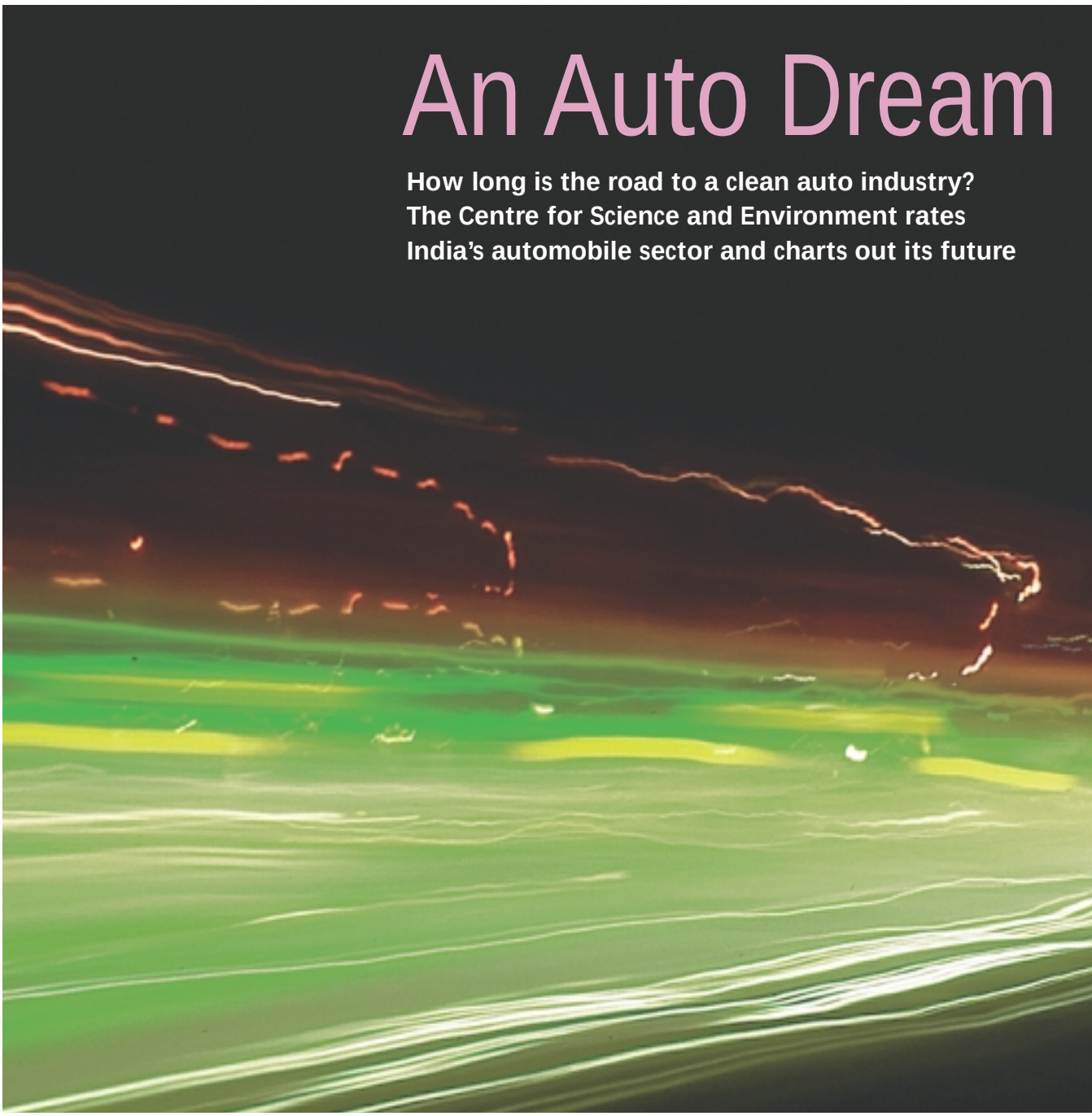

An Auto Dream

How long is the road to a clean auto industry? The Centre for Science and Environment rates India's automobile sector and charts out its future

Auto industry revealed

Winners and losers

Trouble under the bonnet

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VOL 10, NO 13 NOVEMBER 30, 2001

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THE FIVE LEAVES AWARD

COVER STORY

COVER PHOTO: AMIT SHANKER

Editor: Anil Agarwal

Publisher: Sunita Narain

Special Contributors: Raghavendra Gadagkar (Ecological Sciences); Shobhit Mahajan (Physical Sciences); V. Nanjundaiah & Veena Rao (Life Sciences)

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SETTING OUT

India's automobile industry may not have come out with flying colours, but a process is underway. Any real change will come only if the government wakes up to the perils of vehicular pollution

SINCE the release of the environmental rating of the automobile sector by the Centre for Science and Environment several people have told us that it must have taken some courage to rate the auto sector, which is headed by some of the most powerful industrial stalwarts like Rahul Bajaj and Ratan Tata.

We had never thought on these lines. On the contrary, we found the industry extremely docile and cooperative.

Consider this. First, the automobile industry shared data with us that they don't even share with the various agencies of the government. We asked companies to send us the specific emissions of their vehicles and produce emission certificates from the Automotive Research Association of India (ARAI) for each vehicle that we were rating. This data, we know, is never shared. Certainly, the ARAI refuses to part with this information even to the Central Pollution Control Board (CPCB) considering it private and confidential. We have always remarked that this is private information collected in public interest. But the public is kept in the dark.

Secondly, Tata Engineering (TELCO), with which our Right to Clean Air Campaign has had a running battle for the past four years, participated willingly and with interest in our environmental performance rating exercise. Our relationship with TELCO has not been very genteel. Not only has TELCO taken potshots at us, we have also not hesitated to give it back. The problem has been TELCO's interest in diesel based vehicular technology and our efforts to reduce the use of diesel to clean up the air of Delhi.

It is clear to us that though the civil society is still very weak on pollution related issues, this situation will inevitably change as noxious fumes grow around us. In many cases, the interaction between the civil society and industry will be confrontational as they have often been across the world. But, as this exercise shows, there can also be spaces where the interaction can be more cooperative.

In fact, we believe our effort will provide critical help to the industry to develop an environmental vision and strategy. The detail with which we have studied the automobile industry will help industry owners make much better decisions in the future. This is the first comprehensive green audit of the sector. Our experience with the green rating of the pulp and paper sector was that our rating helped the company management to get a perspective, perhaps for the first time, of just what is needed. And because we place high standards — measuring the current status with the global best practice — it makes CEOs map the road ahead.

Our key finding was that while with economic liberalisation the world's leading companies have invested in India, these global giants — the best in the world — are not bringing in their most emission efficient products. In other words, the country is not getting the advantage of receiving environmentally friendly technologies. We found that multinational companies, scored higher marks, but were only marginally better than their Indian counterparts.

But is industry to blame? Or is the government, which is extremely callous and indeed oppositional to the environmental problem, more responsible? At the meeting to release the rating, Aditya Vij, managing director, General Motors India Limited, said his company was prepared to manufacture Euro III emission compliant vehicles and even better. "But we need cleaner and compatible fuel," he said. Indeed, we found that many Indian auto manufacturers have

vehicles capable of meeting much better emission norms, even today. But clean fuel and stricter emission norms remain a real handicap. Given the shenanigans of this near monopolistic, government owned oil industry, which is controlled by ministers who care two hoots about the environment, getting clean fuel is a near impossible task. They will move only when there is a hammer from the courts.

In fact, we have often wondered if we should also rate the oil industry. But then we gave up the idea, simply because they would have no reputational incentive or disincentive. And we are sure there will be a total lack of cooperation from them. In fact, what is amazing is that the private sector, for all its ills, remains more accountable to public pressure in a democracy. On the other hand, the public sector, supported by politicians and bureaucrats with all their vested interest, has no public accountability. Our experience is that markets and democracy can function, but not monopolistic industry, even if controlled by democratically elected *netas*.

Our rating is based on a complete life cycle analysis — from sourcing of raw materials, to production plants, product and finally its disposal. We found that designing a life cycle study had to be dynamic — different for different industrial sectors. In the pulp and paper sector, the maximum weightage was on the production facility, simply because it had the greatest environmental impact. However, in the auto sector we reworked the criteria to give emphasis on the product, the vehicle, as over 80 per cent of the primary energy consumption and most emissions are at this stage. But we failed on one count: to give adequate importance to the issue of disposal of the product. As Saifuddin Soz, former Union minister for environment and forests and a member of our Project Advisory Panel, pointed out, it is becoming more and more necessary to force industry to take responsibility for the disposal of the product, not just its manufacture. In Europe, for instance, auto manufacturers will soon have to take back the vehicle for disposal. This pushes them to use more and more recyclable components.

Time seems to have stopped for Indian manufacturers as far as the design of the vehicle engine, the basic driver, was concerned. We found engine technology is at least a decade old. Even the catalytic converters used to control emissions are not built to fit the engine, but are add-on features, which we found were mostly unsuitable. Interestingly, the environmental imperative has pushed industry. It is the infamous polluting two-stroke two-wheeler, which has seen the maximum development to make it emission efficient.

It is clear from our analysis that, on the whole, individual companies will be reluctant to invest in advanced technologies, without any incentive. Today, the situation is that companies have a vested interest in maintaining technological *status quo*, simply because they have already spent money on incrementally upgrading their product. In other words, they have gone from producing Euro I to Euro II vehicles for instance. But the need in India, which is choking with pollution and has a large number of dirty vehicles already on the roads, is to bring in the world's best technology, today. Not even tomorrow. When a company moves from Euro II diesel to compressed natural gas (CNG) vehicles, it can leapfrog emissions to reach Euro IV norms, in the case of particulate emissions. But investment in CNG makes sense only for technological laggards and so there is enormous resistance to this change.

The option would be to give financial incentives to those companies which go beyond existing norms. Essentially, reward the emission efficient. Tax the emission inefficient. This is absolutely vital for India if it wants to deal with its growing pollution. And we are definitely one of the most polluted countries in the world today. But for mandarins of the finance ministry and the finance minister in particular, environment is of little concern. And they do not hesitate to say so publicly.

We can rate the various sectors of the Indian industry and maybe even make some change. But will there be any reputational advantage of rating our *netas*. Ultimately, and sadly, it is our brown *netas* and *sahibs* who are the biggest culprits when it comes to the slow murder of the Indian people. ■

— Anil Agarwal and Sunita Narain

PHOTOGRAPHS: AMIT SHANKER / CSE

Mediocre performance: (from left to right) Hyundai's A P Gandhi, Daewoo's I K Lee and General Motors' Aditya Vij

Just passed!

The Indian automobile industry gets a rude shock: its pedestrian performance makes winners look like losers

IT WAS a moment of truth for Indian automobile companies. On October 29, 2001, captains of the auto industry waited with bated breath to learn where they stood on the ladder of environmental performance. India's first environmental and most comprehensive rating of the automobile sector was to be released in New Delhi. But with the results, reality sunk in.

To say that the sector performed poorly will only be an understatement: with a score of 31.4 per cent, it got a mere two leaves award, against a maximum of five leaves. Even the best company did not have much to rejoice: it got just three leaves. It was time for soul-searching. Companies were found wanting in more ways than one. And they accepted the verdict. Some were even willing to incorporate environment as an important consideration in corporate ethics. "Indian auto industry till now has been reactive. But now the time has come to become proactive to environmental concerns," said A P Gandhi, president, Hyundai Motors India, which came second in the overall rating.

The Green Rating Project (GRP) is the fruit of a two-year research by the New Delhi-based Centre for Science and Environment. The project is funded by the United Nations Development Programme (UNDP) and the Union ministry of environment and forests. It is a public disclosure project and based on the principle of voluntary disclosure of information. The hallmark of the project is the transparency at every step. Awareness among all the stakeholders, that is, civil society, industry, financial institutions and the government, is the key element of the project.

Back to ratings

To say that the top company is the best will be a misnomer as it scored less than 45 per cent marks meriting a three leaves award. The passenger car segment led the way — the only segment to get three leaves. The mass transport vehicle segment came second followed by the two and three-wheeler segment. The mass transport segment ratings got a boost due to introduction of compressed natural gas fuelled vehicles. Most companies in top ten are passenger car manufacturers. The exception being Hero Honda Motors, which not only got three leaves rating but also came fifth in the overall rating.

Lip service

It was evident that the Indian auto industry always makes the right noises, but does very little. For example, less than 50 per cent of the companies have an environmental policy. Even 50 per cent of those companies that have policies have failed to address the environmental aspect of the product."There has to be a change in the attitude of the Indian auto industry. They have not shown any inclination to become proactive," said H B Mathur, former professor at Indian Institute of Technology, Delhi who is also the chairperson of GRP's Technical Advisory Panel.

Take for example the issue of engine design. "Issues relating to engine design have been brushed under the carpet as this will take a lot of research and development (R&D) from auto industry," he adds. Mathur gives the instances where engine design has actually improved the environmental performance of the vehicle. Similar changes made to diesel engines used in North America have reduced the particulate matter emissions by 80 per cent, and nitrogen oxides emissions by 50-70 per cent, he says.

But no such modifications in engine

design have been done in India, exposing the double standards of the automobile multinationals. "It is very important to augment R&D for the automobile sector," said Brij Mohan Lal Munjal, chairperson, Hero Honda Motors. Studies like impact of fuel quality on emissions, ageing of the vehicles on emissions need to be undertaken. "Our engineering, chemical and biological laboratories have to share the responsibility with the companies in doing R&D for this sector. There is no reason why they cannot come up with innovative solutions," says R A Mashelkar, director general, Council for Scientific and Industrial Research and member, Project Advisory Panel.

Hide and see

In this two-year exercise, the project achieved 90 per cent participation from the 29 automobile companies in the country. Still three companies chose to be non-transparent and refused to participate in the exercise. The three companies, which chose to continue being outcasts from transparency are Bajaj Tempo Ltd, Yamaha Escorts Motor Ltd. and Swaraj Mazda Ltd. Naturally these companies hit at the bottom of the pile with zero marks.

Despite repeated efforts from the GRP unit to contact these companies for information, they never responded. Towards the end of the rating exercise they informed CSE that they would not be participating. Maybe they had something to hide. But now they will have to explain to the civil society their absence.

It remains to be seen whether these companies choose to sit out and pay with their company's image when the next ratings take place. Time will also tell whether these ratings will be a wake-up call for the auto industry to pull up its socks. GRP's previous experience with rating the paper and pulp industry has shown that the ratings have worked (see box: turning over a new leaf on p24).

GRP will always remain a platform for various interest groups to come together . It is finally the civil society, which has to give its mandate and sensitise all sections of the society about environmental issues confronting the country. "I believe the best is yet to come," said Manmohan Singh, former Union finance minister and chairperson of the Project Advisory Panel (PAP), Green Rating Project (GRP). "The process needs to be taken forward," he added. ■

HEARD AT THE FUNCTION

"This exercise has built a good relationship between various stakeholders — government, civil society and the industry."

— DOROTHY GORDON
United Nations Development Programme

"GRP makes you see where you stand and what you must do. You have transformed us. We will strive to improve our environmental performance."

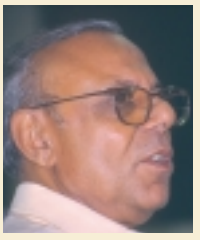
— BRIJ MOHAN LAL MUNJAL
Chairperson, Hero Honda Motors

"This rating project will act as a motivating force for all the stakeholders to improve their environmental performance."

— MANMOHAN SINGH
Former finance minister and Chairperson, Project Advisory Panel (PAP), GRP

"This is not just a rating, rather it is a symbol, message, spirit; the spirit of social and citizen audit."

— R A MASHELKAR
Director general, Council for Scientific and Industrial Research and member PAP, GRP



"If the industry wants to be in business, going green is not just a matter of choice, but it is a question of their survival."

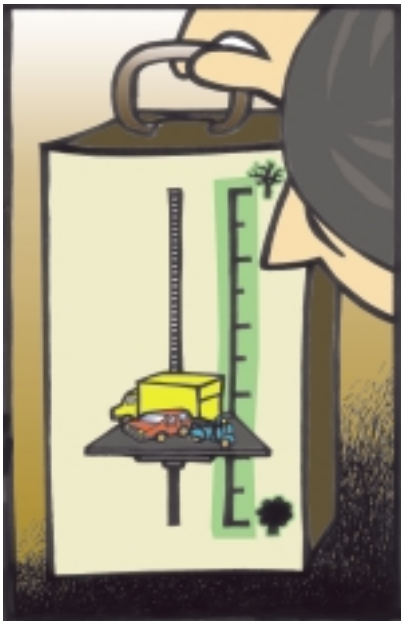
— ALOKE MUKHERJEA
Senior advisor, ABB. ABL Ltd and member of PAP, GRP

"Such rating exercise not only generates environmental consciousness among consumers, but also guides the industry to plan for the future."

— ADITYA VIJ
Managing director, General Motors India Limited

Driven for and by the people

GRP has emerged as a truly democratic indicator of the direction in which corporate environmental governance is headed



KUMAR

IN THE past few decades, society has played a proactive role in purging the market of toxic products. This has been largely possible due to sustained information campaigns, highlighting the damage these noxious substances cause to the environment and health. Cases in point are public disclosure drives that have led to the banning of DDT (dichlorodiphenyl trichloroethane) and intermediate dyes, and forced the paper industry to consider chlorine-free bleaching.

The foundation for the Green Rating Project (GRP), too, is laid on public participation — from evaluation to revelation (see box: *Five steps to final assessment*). Awareness, transparency and voluntary disclosure are its hallmarks.

GRP assesses corporate environmental performance within a specific sector and disseminates the results to a wide audience, which includes investors, consumers, financial institutions and the media, both within India and abroad. It seeks to develop and function as a form of governance based on non-bureaucratic institutions and market-oriented policies.

Today, a company's eco-friendliness is seen to give it a reputational advantage. This reaffirms the close link that the environment has with economics and underscores the importance of such a monitoring exercise.

The genesis

GRP was conceived in the mid-1990s and is inspired by the work of New York-based non-governmental organisation (NGO) Council of Economic Priorities (CEP), which rates the social and environmental performance of industries in the US. In view of the dismal track record of government agencies in controlling pollution in India, the Centre for Science and Environment (CSE) seized the initiative and embarked on the venture — the first of its kind conducted by an NGO in a developing nation. The pulp and paper industry was selected as the pilot project because of its impact at the raw material and production stage. The automobile sector was chosen next as its most visible effect on the environment is felt during the product-use phase. In tandem, they enabled GRP to develop a generic model for life-cycle analysis.

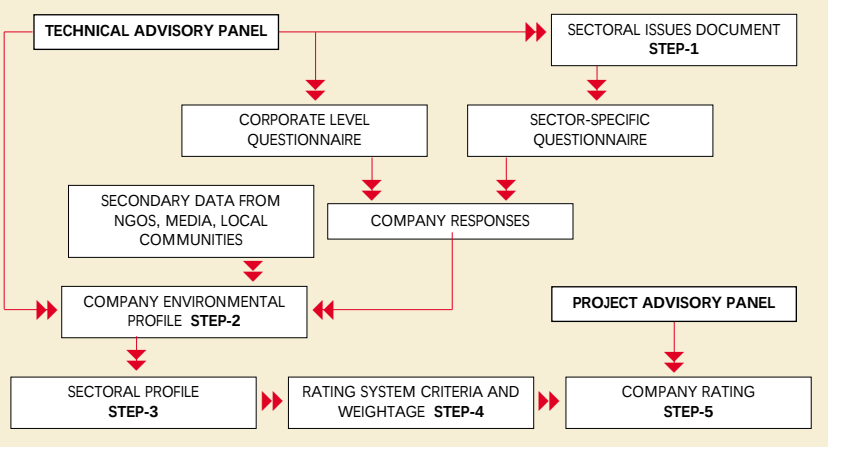
The bottlenecks

The project hit many a roadblock before its inception. Unlike the US, there is no centralised database in India. Whatever little information exists, is not easily accessible. Within the environmental community, there is little credibility in the data being supplied to the government. By contrast, the United States Environment Protection Agency's Toxics Releases Inventory has yearwise facts and figures on the wastes and emissions of companies. Moreover, they are readily available and authentic. To overcome this problem, GRP based its exercise on voluntary disclosure of environmental performance. It verified the information supplied by subjecting it to rigorous technical scrutiny.

Key elements

- Assessment is based on life-cycle analysis
- Sector-specific approach to environmental performance rating
- Forces the image-conscious and stock market-sensitive companies to become trendsetters because they have the wherewithal to improve
- Focuses on a company's future environmental commitments rather than dwell on its past
- Develops data after its voluntary disclosure by companies
- Involves the public in this exercise as green inspectors who survey the plants on GRP's behalf
- Ensures transparency through an institutional mechanism consisting of independent expert panels
- Evaluates primary data given by companies and secondary data provided by green inspectors and other independent agencies
- Assesses non-participating companies on the basis of secondary data
- Takes into account the companies' feedback before making the findings public
- Recognises outstanding performers and exposes errant companies
- Involves public dissemination of rating results

Five steps to final assessment



T H E T E A M

STEERING GROUP

To lend credibility to the entire rating process, a Project Advisory Panel (PAP) has been set up comprising politicians, scientists, eminent members of the civil society, lawyers and judges and industry leaders. It has been formed to advise, guide and steer the project and give the exercise a holistic outlook. This is the forum that scrutinises the ratings and gives the final nod to the results before public dissemination. The panel also acts as a sounding board for testing new ideas and building up pressure on the government in formulating fiscal and environmental policies to support sustainable development.

CHAIRPERSON

DR MANMOHAN SINGH, *former Union finance minister and Member of Parliament*


DR MANMOHAN SINGH

VICE-CHAIRPERSONS

DR M S SWAMINATHAN, *chairperson,* M S Swaminathan Research Foundation
JUSTICE P N BHAGWATI, *former Chief Justice of India*


DR M S SWAMINATHAN

MEMBERS

PROF SAIFUDDIN SOZ, *former Union minister of environment and forests*
DR R A MASHELKAR, *director-general,* Council for Scientific and Industrial Research
VIKRAM LAL, *member-supervisory board,* Eicher Good Earth Limited
T N NINAN, *editor-in-chief,* Business Standard
A PARTHASARATHI, *chairperson,* Centre for Studies in Science Policy, Jawaharlal Nehru University
ALOKE MOOKHERJEA, *senior advisor,* Asea Brown-Boveri Ltd
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BIBEK DEBROY, *director-research,* Rajiv Gandhi Foundation
V N DAS, *director-safety, health and environment,* Ranbaxy
A N JHA, *former senior vice-president,* Essar Investments and *director,* Total Risk Management System Private Limited


JUSTICE P N BHAGWATI

PROFESSOR M K PRASAD, *coordinator,* Environment Centre, Kerala Sastra Sahitya Parishad
FATHER C J SALDANHA, *director,* Centre for Taxonomic Studies
M L GULRAJANI, *dean-industrial research and development,* Indian Institute of Technology, Delhi
DR G MOHAN GOPAL, *director,* National Law School of India
NASEER MUNJEE, *deputy managing director,* Industrial Development and Finance Corporation

DRIVING FORCE

The Technical Advisory Panel (TAP) imparts expertise to the project. It consists of leading technologists of the sector, who keep the GRP team focused at every stage. Be it preparing questionnaires, reviewing information or finalising the ratings. They go through the data with a fine-tooth comb, identifying the possible lacunae and technical drawbacks.

CHAIRPERSON

Dr H B MATHUR, *retired professor,* Mechanical Engineering Department and Centre for Energy Studies, Indian Institute of Technology, Delhi, and *emeritus professor,* Delhi College of Engineering, New Delhi

MEMBERS

DR B P PUNDIR, *professor,* Indian Institute of Technology, Kanpur
PROF M M MEHTA, *managing director, Maharishi Technology Corporation Ltd.*


DR H B MATHUR


DR B P PUNDIR


PROFESSOR M M MEHTA

GROUND SQUAD

In 1999, the GRP team began its study on the automobile industry. To collect data on 35 production plants, CSE shortlisted qualified volunteers and appointed them green inspectors.

GREEN INSPECTORS

DEBANJAN BANERJEE, *environmental manager,* Bengal Chamber of Commerce, Kolkata
RAJEEV VARMA, *environmental activist,* Bangalore
A K JINDAL, *environmental engineer,* Jindal Environmental Services, Pune
VIKAS KAPOOR, *consultant,* Sriram Consultancy Services, Ludhiana
GANESH KULKARNI, *student,* Jawaharlal Nehru Engineering College, Aurangabad
PRIYANKA MOHAN, *environmental science student,* Anna University, Chennai
SHEFALI RANGANATHAN, *environmental science student,* Anna University, Chennai
INDUBALA, *environmental science student,* Anna University, Chennai

INTERNAL TEAM

CHANDRA BHUSHAN, *coordinator*
Monali Zeya Hazra, Bhoopinder Singh, Anand Srivastav, Samir A Qadir, Amaresh Misra, Arvind Pandey

Turning over a new leaf

A year after GRP, the pulp and paper sector is cleaner and greener

All pulp and paper production plants with more than 100 tonnes per day (tpd) production capacity were short-listed for the rating that was announced on July 18,1999. The sample comprised 28 production units of 23 companies spread across 13 states. Overall, the sector recorded a dismal performance with only two production units getting the 3 leaves award. Thirteen were in the 2 leaves category, while 12 managed only 1 leaf. One was not ranked for its failure to fulfil the eligibility criteria. The paper sector rating highlighted the importance of proper natural resource pricing for better efficiency. It was also noticed that the debate on the use of chlorine-free bleaching had passed unnoticed.

The pulp and paper industry was found to devour natural resources and emit a large proportion of these in the form of waste during the production and disposal stages. GRP's other revelations included the rampant use of obsolete technology and the small size and capacity of the Indian mills.

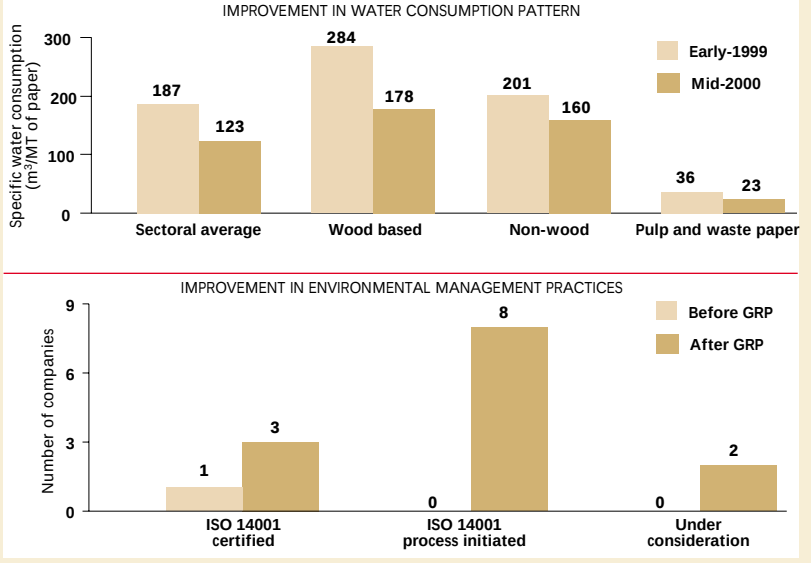
A year after the release of the rating, representatives of pulp and paper companies met the GRP unit at a workshop organised by the Centre for Science and Environment to take stock. The feedback given by them was very encouraging:

- **In the short span of a year, many companies have begun to alter their policy of buying wood from natural forests and have moved towards farm forestry. The sourcing from farm forestry has increased by 20 per cent.**
- **Water consumption, which was as high as around 250 cubic metres per tonne of paper produced at the time of the rating, has gone down by 16 per cent (see graph: *Not on paper only*).**
- **Twenty-three per cent companies have stopped using elemental chlorine, which is non-biodegradable.**
- **There are now three companies with International Standards Organizations (ISO)14001 certification as compared to only one earlier. Eight more are in the process of obtaining the same. ISO 14001 is an environmental management systems (EMS) benchmark awarded to companies that meet the stipulated requirements (see graph: *Not on paper only*).**

The impact of the project on the pulp and paper sector only goes to show that economic liberalisation and privatisation do not cause environmental damage, provided the civil society is encouraged to act as a watchdog.

Not on paper only

Facts and figures suggest a turnaround



The scoring scale

Weightages are assigned to various stages in the product's life cycle depending upon their impact on the environment. Consequently, even as the broader criteria remain constant for all sectors, weightages may vary substantially. While maximum importance was given to the raw material procurement and production phase in the pulp and paper industry, product-use stage got top priority when the automobile sector was rated.

The scoring scale is based on GRP's principle of pushing companies to perform much better than what the prevalent regulations stipulate. Whenever a regulatory standard exists, it is, therefore, fixed as the lowest benchmark. In the absence of this, the Indian average performance is the yardstick to measure minimum eligibility.

To arrive at a comparative scale, the average of all companies is calculated and given 2 marks. The best performer gets 8 and those below average are given 0. A linear scale is used between 2 and 8. The most eco-friendly companies are awarded 8 marks out of 10 because even in their case there is room for improvement.

Mileage for all

GRP has laid down the path for coherent corporate environmental governance. Even as investors associate a company's poor green record with financial risks and liabilities, a high rating increases its goodwill brightening business prospects. Public interest litigation (PIL) has also helped heighten public consciousness in this regard.

The age-old concept of there being an inverse relationship between environment and economy has become obsolete. In the previous rating, it was seen that a mill with a sound environmental management programme had a 60 per cent chance of earning profits and vice-versa.

The project includes an environmental awareness programme with special emphasis on management graduates, environmental managers and government officials. Training workshops covering media, regulatory authorities, industry and financial institutions are a part of this programme.

It also plans to push for the introduction of fiscal and environmental policies to support sustainable development. ■

BLUEPRINT OF LIFE CYCLE WEIGHTAGES

Life-cycle analysis (80 per cent)		Corporate governance and proactive initiatives (20 per cent)	
Environment performance during the supply chain	7.5	Corporate environmental policy and environment management systems	9.5
Environmental performance at the production plant	8.5	Parameters related to the consumer awareness raising initiatives of the company	2.0
Perception of green inspectors	3.0	Corporate leadership	8.5
Environmental performance of product	56		
Environmental performance during product disposal	5.0		

(weightages assigned in percentage)

From cradle to grave

GRP followed a life cycle analysis and set up parameters in accordance

THE Green Rating Project (GRP) team knew from the beginning that a thorough rating process would require a set of parameters and methodology that would stand the test of time and the scrutiny of the industry as well as critics. There was no precedent to go by, therfore the team embarked on an unchartered course coming up with this pioneering process. It set about preparing an exhaustive rating guideline, keeping in mind that both the qualitative and quantitative aspects of a company's environmental performance had to be assessed. The team decided to construct parameters covering the entire life cycle of the industry.

One look at the comprehensive list of parameters drawn up shows how the blueprint for the automobile sector rating was based upon scrutinising all process in the sector — planning at the board-room level, the supply chain and production floor. The analysis did not end there. The consequences for the environment of the consumer using the vehicle and the manner of final disposal too was brought to scale, keeping a constant vigil for the pro-active initiatives taken by the company all through. In all, the GRP analysed the auto industry for more than 150 major parameters with numerous minor indicators.

Though the greatest environmental impact of the sector occurs when the vehicle is actually used, the other processes too have their own bearings on the environment. The project team therefore used a weighted parameter scheme, giving more weight to the crucial factors and less to the less relevant ones. The team assigned 56 per cent of the total weight to the parameters related to the environmental performance of the product and the rest 44 per cent of weight was distributed across the parameters in proportion to the environment impact caused during the other phases of the life cycle.

Outsourcing pollution

Primary studies conducted by the GRP team showed that the automobile sector sources a large percentage of the parts and components required for manufacturing vehicles. Approximately 50 per cent of this outsourcing is done from small-scale manufacturers. It makes economic sense to do so. However, outsourcing takes a huge toll on environment, as small-scale companies have neither the means nor the intent to reduce pollution. The GRP therefore assessed the procurement policy of the various automobile companies using the Pollution Transfer Index. The index is a factor of percentage of parts and components outsourced and the capability of the respective vendor to handle the pollution aspect of the process and the respective pollution intensity of the process. GRP analysed whether the company in question gives emphasis to conducting business with environment conscious companies and whther it has the credentials to prove it.

Within the production plant

At the production plant itself the GRP team studied how efficiently energy and other resources had been utilised. Main sources of energy for the automobile sector constitute conventional fuels, such as diesel and cleaner fuels such as propane and compressed natural gas. Cleaner fuels, though, are much less in vogue. During production, processes like metal casting, press shop, heat treatment, fabrication, painiting and machining usually consume the greatest energy. GRP assessed the measures undertaken to reduce energy consumption and mitigate pollution during the production processes. GRP rated metal casting processes for the percentage of scrap used in comparison to virgin metals and on the trends in the consumption of scrap in the last three years.

The type of oil and lubricants used was studied during machining and fabrication processes. Large volumes of

oils, lubricants and coolants, majority of which are non-biodegradable and toxic in nature, are used during the two processes. The initiatives taken by the companies towards the use of environment-friendly oils, lubricants and coolants was assessed. The project also examined the toxicity index of the metals used for electroplating, which includes heavy metals like chromium, lead and zinc. The paint shop was a special area of focus for the GRP because painting is one of the most polluting processes in an automotive plant.

Besides peering at the chain of processes that lead to the manufacturing

A perfect model

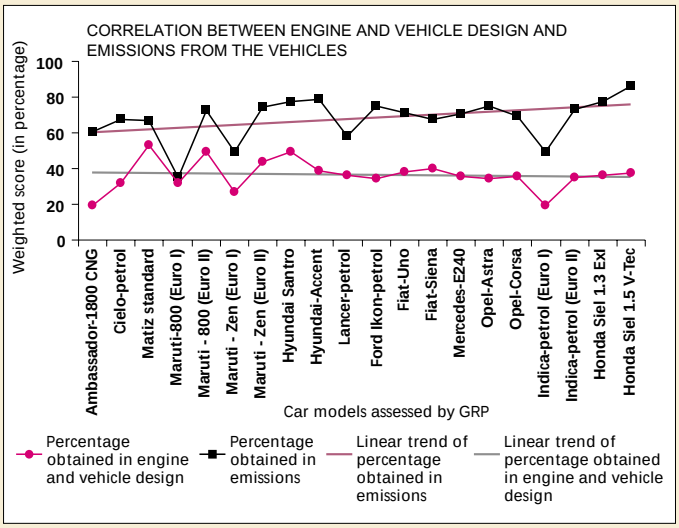
The rating parameters give a complete picture of the automobile sector's environmental performance

Choosing a set of parameters is an exercise in precision. The collected data when sieved through the parameters should consistently give similar results and be in consonance with evidence available on ground. Keeping this in mind, GRP ensured that the rating criteria were as objective as possible. The robustness of the rating criteria was checked against stringent benchmarks.

It was only after the parameters passed the litmus test of robustness that the ratings process was completed. The data set generated by GRP on engine efficiency correlated well with the emissions data generated by the Automotive Research Association of India. The high level of correlation proved that the parameters drawn for assessing engine design could withstand expert scrutiny.

All in all, GRP was able to satisfactorily achieve a high degree of correlation in all aspects of the rating methodology, proving its robust ness as well as validity.

Robust and on mark



Inspecting the site

GRP sends a team of green inspectors to validate the data collected

The rating process asked the automobile companies to disclose information on the parameters voluntarily. But it also took help from a team of volunteers who were given the mandate to inspect the production plant and assess the companies for:

- Transparency in disclosures
- Housekeeping and safety
- Environment management systems
- Working of the effluent treatment plant and
- Management of air pollution controls, solid waste and hazardous waste disposal

The primary survey reports received from the green inspectors were used to crosscheck with the performance data. The inspectors' reports helped correlate the environmental performance of the production plants with the levels of pollutant discharged in water, land and air and arrive at the overall environmental impact of the company in its surrounding sphere of influence (the range till which the impact of a company is visible). The task was arduous. But commendably the inspectors brought in results that were crucial and reconfirmed the data generated by the secondary analysis.

of a vehicle, GRP also looked at the pollution load generated by the companies. It assessed the pollution in the discharged water, the emissions released in the air and solid waste generated and the efficiency of the waste treatment plants. These were compared against the regulatory standards set up by the government. Companies got additional points for taking the initiative and going beyond the compliance levels.

Nuts and bolts

In a change from the run of the mill ratings, GRP decided to take a look at, what many would call the meat of the issue — the engine inside the vehicle. It broadly segmented the issues concerning the engine into three, vehicle and engine design, pollution control technology and actual emissions. Vehicle and engine design was given the highest weightages out of the three. The pollution control technology being used in the vehicles was given the second weightage while the actual emissions from the vehicle got the least weightage. The weights were assigned keeping in mind that engine design has a direct correlation with emissions and is most crucial, whereas the pollution control technology is functional, in India, only for the initial life of the vehicle and becomes irrelevant in the later period of the vehicles running life. The emission values in the test reports too are of comparatively little significance as they are more a mirage than reality for the consumer under real driving conditions.

Driving to the grave

The last stage in the life cycle of a vehicle, that of final disposal and recycling of parts of the vehicle, was also brought under the ambit of the rating process. While driving the car causes considerable impact on the environment, disposing or recycling of the aged vehicles poses its own threat. Therefore GRP looked at what, metaphorically may be called, the graveyard of the vehicle. The following initiatives taken by companies for environmentally sound disposal or recycling of the product were considered: whether vehicle design incorporated ideas of recycling, the extent to which the vehicle could be recycled and the development of product recycling manual.

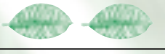
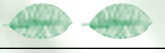
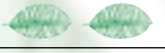
Besides what happens at the factory floor, on road and at disposal sites, the GRP also took a close look at the going-on inside the boardrooms and how integral environmental initiatives are to company operations. GRP was looking for leaders in the industry, who, besides driving their companies to profits also believe in riding the stagecoach of environmental consciousness.

Another way of assessing corporate endeavours towards environmental management was to see how the companies has tried to create an informed consumer. GRP decided to assess and incorporate in its parameters a measure of how seriously the companies took consumer sensitisation.

This complete life cycle analysis ensured that the rating became a robust model. ■

The Report Card

Daewoo Motors India stands first, followed by Hyundai Motors India and General Motors India. But the scores tell a different story. No company gets five leaves, the highest award. There isn't much to choose from. When the top company gets a score of 43.50, it speaks about the overall poor performance of the auto industry. There was stiff competition for the bottom place, but three non-participating companies walked away with the honours

COMPANY	SCORE	RANK	RATING
Daewoo Motors India Ltd.	43.50	1	
Hyundai Motors India Ltd.	41.93	2	
General Motors India	40.77	3	
Mercedes–Benz India Limited	39.60	4	
Hero Honda Motors Limited	39.57	5	
Maruti Udyog Ltd.	39.10	6	
Honda-Siel	38.20	7	
Ford India Ltd.	37.62	8	
Fiat India	35.70	9	
Volvo India Pvt. Ltd.	34.60	10	
Bajaj Auto Ltd.	32.80	11	
Tata Engg. & Loco. Com. Ltd.	32.00	12	
Hindustan Motors Ltd.	31.10	13	
TVS Suzuki Ltd.	30.90	14	
LML Limited	29.40	15	
Toyota Kirloskar Motors	28.10	16	
Scooters India Limited	27.80	17	
Kinetic Motor Company Ltd.	27.40	18	
HM-Mitsubishi Lancer	27.40	19	
Ashok Leyland Ltd.	26.40	20	
Eicher Motors Ltd.	25.10	21	
Mahindra & Mahindra Ltd.	24.20	22	
Royal Enfield Motors	23.20	23	
Majestic Auto Ltd.	20.50	24	
Hero Puch	20.30	25	
Kinetic Engineering Ltd.	15.82	26	
Bajaj Tempo Limited	0	27	
Yamaha Motor Escorts Limited	0	27	
Swaraj Mazda Limited	0	27	

DAEWOO MOTORS INDIA LTD

ANANDA BANERJEE / CSE

It's the greenest one

The Korean auto major leads the green bandwagon. But to outgrow the 'just above average' status, it needs to accelerate its environmental performance

DAEWOO took off from where Toyota left and since then there has been no looking back. The company that had its genesis in a joint-venture with DCM Limited, after the latter's experiment with the Japanese auto giant failed, has today catapulted to a position of supremacy among a host of contenders.The reason: its successful manoeuvring of an apparently bad situation. Pumping strength into the weak infrastructure that it inherited in 1994, Daewoo has an installed capacity of 72,000 cars from its production facility in Surajpur industrial area near the capital. Its exceptional performance is credited to sustained corporate leadership coupled with a positive approach towards popular global practices. The company has scored a high 55.39 per cent to rank first in this indicator which has seen some of the top players languishing at the bottom of the ladder.

Where most automobile companies are content to issue manuals on pollution control equipment, Daewoo has gone a step ahead by issuing a separate newsletter and periodical advertisements as updates on engine design and environmental issues. Besides, it offers the longest warranty period and maximum free service to ensure that the vehicle does not fall into unreliable hands. As a customer support infrastructure, it has a network of 110 dealers and 100 authorised service stations all over India.

The overall success also stems from the company's ability to be at the forefront of incorporating new technologies in its vehicle. It has undertaken considerable research and development in its design, studying the impact of fuel quality and ageing emissions. Today, Daewoo sports an entire vehicle fleet based on petrol and is also among the few to introduce factory-fitted CNG passenger car (Cielo) and Euro II vehicle at a time when carburettor-based models throng the roads.

Nevertheless, the company has its share of grey areas. Despite faring above average with a score of 38.63 per cent in corporate environment policy and management systems, it leaves much to be desired when pitted against top scorer like Maruti. While the company is still to be certified for ISO 14001, it does have a comprehensive environmental policy. But since it is signed by the middle-level management and needs improvement in terms of communication to the people at large, its acceptability has been somewhat restricted.

Unfortunately, the company's environment department like the rest of the

auto sector, has been clubbed with the utility department. Another area where it loses out is environmental management systems (EMS) certification, which is yet to receive the green signal. And though there is a well-defined nodal committee to monitor the environmental performance, the company has failed to take maximum advantage of this infrastructure.

Its major cause for concern, however, is the absence of specific procurement policy and guideline for selection of suppliers in terms of environmental impact. The company outsources a huge chunk of both primary and secondary components from large-scale vendors. This is particularly true in the case of its top product Matiz. Thus, like most others, the company carries the burden of environmental pollution in a more oblique fashion while appearing to be ecocompliant.

The company has also recorded a lacklustre performance in consumption efficiency, meeting only 13 per cent of its energy demand from clean gaseous fuels. It is still dependent on groundwater to meet its entire water requirements even though rainwater can be explored as a suitable option. Nor for that matter, has it kept a watch on the liquid waste generated from the machining shop. Nevertheless, the company has been largely successful in pollution control and prevention. Daewoo has topped the product use and owes its exceptional success in this field to Matiz. In product disposal, the company occupies the lower rung but this is reflective of the performance of the entire auto sector. ■

DAEWOO

LEADING THE CHARGE

Parameters	Score (percentage)	Ranking
Corporate environment policy and management system	38.63	11
Corporate leadership and proactive environmental initiatives	55.39	1
Procurement policy and supply chain management	16.84	18
Process and consumption efficiency	39.49	8
Pollution, pollution control and prevention	37.02	9
Product use	49.46	1
Product disposal	3.77	15

HYUNDAI MOTORS INDIA LTD

CSE

Miles to go...

Despite being placed second for its sharp accent on resource management, Hyundai has to kickstart initiatives to be in the driver's seat

THE company comes close on the heels of the other Korean counterpart. Literally. Hyundai made its appearance in 1996 — exactly two years after Daewoo launched its operations in India. The wholly owned subsidiary of US $8.24 billion Hyundai Motor Company has rolled out a whopping 100,000 cars last year and has plans of doubling its capacity by investing US $410 million.

The company derives its cutting edge from impressive energy and water saving trends to emerge as the runners-up with a score of 60.88 per cent among some fancied names in the sector. Making long strides in the field of cleaner gaseous fuels, Hyundai has shown a greater commitment to the ecodrive by switching to clean gaseous fuels like liquified petroleum gas (LPG) for meeting as much as 22 per cent of its energy demand. Though not a big water guzzler, it is still to make itself self-sufficient as it is completely dependent on groundwater. The company is also gradually weaning itself from paint and primer use, bringing down toxicity levels to a considerable extent. It has made some genuine efforts at keeping a strict vigil on the volatile organic compounds (VOC) emissions on one hand and recycling the air from the paint shops on the other. Hyundai nonetheless, need to evolve a system for recycling hazardous waste rather than following the conventional practice of disposing it of.

Similarly, product use is another of Hyundai's stronghold where it has scored 49.33 per cent to occupy the second position after running neck-and-neck with Daewoo. Both its models —Santro in the economy and Accent in the luxury car segment — have performed well in this phase, which has strengthened the company's overall standing. While Santro, rated the third best car, boasts of high fuel efficiency, good vehicle and engine design, making it the third least polluting vehicle in the segment, Accent lays strong emphasis on emission control equipment. Sadly, the company's performance in product disposal is no better than most and in this parameter, it is placed in the bottom half of the tally. The recyclibility level of vehicles is its only plus point.

The company has recorded average performance in educating the customer on the environmental aspect of the vehicle. As part of its campaign on a transparent information system, it has followed some general practices. The company rolls out maximum number of its vehicles that are petrol based. It has also complied with emission regulation by as

HYUNDAI

ON THE SLOW TRACK

Parameter	Score (percentage)	Ranking
Corporate environment policy and management system	31.85	15
Corporate leadership and proactive environmental initiatives	35.46	8
Procurement policy and supply chain management	22.99	14
Process and consumption efficiency	60.88	2
Pollution, pollution control and prevention	34.25	12
Product use	49.33	2
Product disposal	2.95	16

much as 79 per cent, with all its vehicles following the Euro II norms.

However, it badly lags in the area of research and development in India, being heavily dependent on its parent company. It has neither the facility for assessing the impact of fuel or ageing on emissions, nor any drive to introduce vehicles by alternate fuels in the country. Even in other indicators like corporate environmental policy and management systems, Hyundai has gained a reputation it can do without. Its environmental policy focuses only on the production plant and completely ignores the aspect of product development — an integral issue in an automobile company. In much the same way, its environment department is not a separate entity. Its EMS certification is in the very initial stages of formulation and though targets have been set to monitor the performance, the system is weak.

The company has already invested Rs 1,040 crore to develop a full-fledged production facility at Sreeperumbudur, near Chennai. The unit is not just an assembly body but also manufactures some components. Even though the painting and heat treatment aspects are looked after by the company itself, its overall performance in this sphere is marred by its heavy reliability on outside sources. It lacks a coherent procurement policy and has not made any attempt to push it vendors to reduce pollution at their end. This may help in reducing the capital cost needed to set-up a car manufacturing plant but has a huge environmental cost as the suppliers neither have the means nor the intent towards a clean drive. ■

GENERAL MOTORS INDIA LTD

Testy drive

The multinational ranks third but its performance cannot be a badge of success on its huge corporate shoulders

OPEL Astra, General Motors's sleekly-modelled luxury car might be zooming on the streets, the company may have bagged the third position in the GRP rating, but its environmental credentials are far from being top notch. In fact, the overall score of just 40.77 per cent, reveals its poor environmental performance as well as that of the entire industry.

The reason for its relatively good showing in certain parameters is that this ambitious venture between General Motors Corporation and C K Birla group of companies has taken a few greening measures. The multinational has a separate environment department. Besides getting the EMS certification, it targets and monitors the environmental performance more comprehensively, runs better training programmes and budgets for such activities.

But it suffers from myopic management when it comes to developing

its policy goals. General Motors' environment policy lacks the drive to push for the manufacturing of environmentally sound vehicles. It is largely oriented towards improving just the production processes. Twelve per cent of the vehicles in the company's Indian stable are fuelled by diesel. The rest run on petrol.

General Motors' products rank fifth in overall product use, pitched as it is against some fancied names like Matiz, Maruti and Santro among others. Opel Astra, its more saleable model, is ranked 12th with 43.28 per cent score and Opel Corsa ranks 13th with 43.09 per cent. Both these vehicles have the highest compression ratio among all the petrol-run cars.

Though such figures might work to strengthen the company's brand equity but that the fact is the company has not planned to introduce a hybrid or alternative fuel engine. Also, it has not invested in research and development in India. Therefore, it has limited ability to adapt to the demands of the tougher Indian conditions.

And when it comes to its procurement policy and supply chain management the company ranks second with a score of 42.87 per cent. The reason for its comparatively better performance is presence of a clear policy and guideline for sourcing of materials from vendors. It has laid a guideline, which requires all its suppliers to become ISO 14001 compliant within a predefined time frame. Out of its 120 local suppliers, seven are already certified, 11 are committed for certification by 2002 and rest by the following year.

In consumption efficiency the company ranks lower as it has an ambivalent record in this area of operations. Though the company manages its resources poorly with increasing trends with respect to per unit energy and water consumption, it does meet 36 per cent of its energy demands from clean gaseous fuels like LPG. However, it has not done much in making itself self-sufficient in water requirement. General Motors meets its entire water demand from groundwater, and has not envisaged water harvesting as yet.

In case of usage efficiency of consumables during various manufacturing stages, the company has registered a mixed performance. It has shown increasing trends for paint consumption but the reverse in case of primer — the substance used as a preparatory coat. General Motors does a trifle better in controlling and preventing pollution. GRP ranks the company 5th in this parameter, giving it a score of 43.55 per cent.

Lastly, GRP ratings show that though the company does have a public relation department, it has not formulated a separate policy for stakeholder relationship and interaction with civil society.

The company ranks 10th in corporate leadership and proactive initiatives. The company does not publish any newsletter for its customers and has also not initiated any programme for its dealers for proper disposal of the waste oil and other hazardous material.

But the worst performance of the company is in the area of disposal or recycling of the vehicles. It occupies the bottom rung, ranking an extremely poor 20th to sport a medal which is not so shinning an example. ■

GENERAL MOTORS

CAUGHT IN THE JAM

Parameter	Score (percentage)	Ranking
Corporate environment policy and management system	48.50	2
Corporate leadership and proactive environmental initiatives	35.33	10
Procurement policy and supply chain management	42.87	3
Process and consumption efficiency	43.26	6
Pollution, pollution control and prevention	43.77	5
Product use	43.19	5
Product disposal	0.00	20

KINETIC ENGINEERING

Suffering a stroke

Saddled with outdated technology, Kinetic Engineering has fallen far behind. To keep pace, the company needs more drive

AN EXPERIENCE spanning over 30 years had done little to contribute to this two-wheeler company's reputation. On the contrary, it has made it complacent, reluctant to revamp its image in a scenario of growing environmental concerns. The company belonging to the Firodia Group is today considered the least ecofriendly. There is no transparent disclosure system giving any information on the polluting aspects of its vehicles or the importance of servicing and maintenance to reduce the emissions. It has neither taken up any activity to use its dealer network to increase consumer awareness nor any organised effort to promote proper disposal of hazardous material from service stations.

Though the company fares well in fuel performance, producing only petrol-fuelled vehicles, it loses out as all the two-wheelers rolled out are two-stroke. When the entire automobile industry is shifting towards four-stroke two-wheeler vehicles, there is some hesitancy on Kinetic's part in moving towards better engine or alternate fuel technology, although it churns out as many as 11,000 two-wheelers per month at its production plant in Ahmednagar.

The poor performance is also due to complete absence of any environmental governance at its unit. The company has neither a coherent policy nor a specific department to address the green concerns. Worse still, there is no inclination for EMS certification and though it has set targets for better resource utilisation, there is no evidence to support its claims. Even where selection of vendors or suppliers is concerned, there is no formal guideline, making the process of outsourcing extremely unreliable. Nevertheless, its efforts for undertaking most of its polluting processes in-house, are noteworthy.

Kinetic Engineering has shown a keen sense of economy, cutting down on energy and water consumption. However, the fact that its sourcing pattern is not ecofriendly as it meets its entire energy needs from non-clean fuels such as diesel, and its water requirements from groundwater has taken some sheen off its efforts. Similarly its consumption of primer is more per unit.

In areas relating to actual pollution control and prevention, the company's performance is predictably below average. There is only a marginal improvement in the characteristic of the wastewater over the years and no pollution control equipment is attached to any of the sources generating air emissions. Even the product performance in vehicle and engine design is just about average with scant regard to any mechanism for its disposal after use. Nor for that matter, is there any information on the recyclability level of its vehicle. ■

HERO PUCH

Stopping dead in tracks

Lack of a coherent environmental policy is the main drawback of Hero Puch. It badly needs to shift gears to address green concerns

THE relatively new entrant among the two-wheelers has gained popularity in the moped segment, but ranks a pathetic 25th with an overall score of 20.3 per cent. It's inept handling of the pollution aspect is evident in nearly all the parameters taken up for assessing its ecocompliance. The absence of a policy relating to environ-

How green is my tally?

Without an ecofriendly vision, the companies have failed to set any specific targets

Parameter	Company	Score (percentage)	Ranking
Corporate environment policy and management system	Majestic Auto Ltd	5.52	26
	Kinetic Engineering Ltd	12.27	25
	Hero Puch	13.54	24
Corporate leadership and proactive environmental initiatives	Kinetic Engineering Ltd	4.38	26
	Majestic Auto Ltd	6.40	25
	Hero Puch	6.46	24
Procurement policy and supply chain management	Kinetic Engineering Ltd	15.38	19
	Hero Puch	9.74	23
	Majestic Auto Ltd	21.32	15
Process and consumption efficiency	Kinetic Engineering Ltd	28.61	13
	Hero Puch	0.00	24
	Majestic Auto Ltd	13.13	20
Pollution, pollution control and prevention	Kinetic Engineering Ltd	16.99	21
	Hero Puch	20.87	18
	Majestic Auto Ltd	5.20	24
Product use	Kinetic Engineering Ltd	17.81	26
	Hero Puch	28.85	20
	Majestic Auto Ltd	30.04	16
Product disposal	Kinetic Engineering Ltd	0.00	20
	Hero Puch	0.00	20
	Majestic Auto Ltd	0.44	19
Overall performance	Kinetic Engineering Ltd	15.82	26
	Hero Puch	20.3	25
	Majestic Auto Ltd	20.5	24

ment clearly shows that this company, belonging to the Munjal Group, has yet to chart a path to tackle these issues. In a situation where environmental responsibilities are entrusted with employees from the manufacturing division and ISO 14001 certification remaining a distant dream, the company has a long way to go before it can go on the right track.

No targets have been set up for improving its resource consumption or environmental performance, paying mere lip service to the entire idea by going through the annual exercise of preparing environmental statement. Other reasons for the company's low score are absence of training programmes for its employees and lack of initiatives towards stakeholder relationship.

The company has shown little drive in consolidating customer relationship. It has hardly taken any steps to educate its customers either through its dealer network or through any written information like a newsletter or an advertisement. Its commitment to better technology is only a partial success. Though Hero Puch has indicated its plan for moving towards four-stroke technology, there is no desire to venture into alternate fuels. The fact that it is largely influenced by government decisions and totally disregards the need for a research and development facility, only indicates inertia when others are experimenting in all possible ways to consolidate their hold in the market.

Even its procurement policy and and supply chain managements are startling evidences of gross disregard for environmental concern. Outsourcing a bulk of its parts and components, the company has no formal policy or any guideline to monitor the performance of its vendors. Nor does it insist on any environmental prerequisite from its vendors. It is heartening to note that some of its vendors have started the process of ISO 14001 certification but this is solely their own initiative without any contribution from the company.

At a time when most companies are showing a downward trend with regard to energy and water consumption, Hero Puch appears to have applied the reverse gear. It is yet to switch to clean gaseous fuels for meeting its energy demand and sources groundwater in entirety for its water requirements. The

only shade of silver in an otherwise bleak scenario is the relatively good performance of its product — Puch moped, which has performed well because of its low weight, good fuel efficiency, better engine design and emissions control. But again no move has been made for setting up a mechanism for product disposal. ■

MAJESTIC AUTO

Illusions of grandeur

Only a drastic change in policy and management will put Majestic Auto on the fast track. As of now, the company is simply an 'also ran'

NO SPECIFIC environmental policy, no initiative towards improving its environmental governance, not even a person responsible for environmental activities … the list is endless and Majestic Auto seems to have lost its aura. The company, which is one of the main units of leading Hero Group, is placed 24th with a score of 20.5 per cent. Like most of those occupying the bottom rung, it suffers from an extremely weak monitoring mechanism and has no immediate plans to go for ISO 14001 certification. Other maladies afflicting the company include absence of targets for improving resource consumption or environmental performance, lack of training programmes for its employees or any initiative toward stakeholder relationship. Like most of its two-wheeler counterparts, it has still to take the customer need into account regarding the pollution aspect. At present, the industry manufactures four brands in two wheelers, but there is no mention of environmental issues in its consumer manuals. Also there has been no effort to start a programme through its dealers network to educate its customer. It neither publishes any newsletter nor any advertisement on environmental issues.

Contrary to market trends, it only produces two-stroke two-wheelers and has no immediate plans to opt for alternate fuel technology. Considering that the group started its operation way back in 1973 and is among the leading producers of moped, it should be spearheading the regulations instead of just following the ones laid down by the government. There is absolutely no research and development activity on the impact of fuel quality or ageing on emissions to its credit. However, the company does score on account of keeping most of its polluting processes such as plating and heat treatment, and painting in-house. But the positive initiative is marred by the fact it has yet to chalk out any formal guideline to monitor the performance of its vendors who contribute significantly to both primary and secondary components,

In consumption efficiency, the company has shown mixed results. While there is an increasing tendency in water consumption, the case is reverse where energy is concerned. Like most others, it has not explored the option of using clean gaseous fuels and is solely dependent on groundwater for meeting its water requirements. The company does not monitor the disposal of grinding sludge or the emissions emanating from the paint shop. Similarly, the company has not disclosed information either on wastewater or the air emissions. Its performance in product use is average with Majestic Panther and Majestic Gizmo.

Both these products, ranking 7th and 8th respectively, are technically better in certain areas than their two-wheeler counterparts. While the company has gained on account of recyclability of its vehicles, there is much scope for improvement in product disposal. ■

Going green guns?

Even the best needs to be better for a clear distinction between leaders and laggards

THOUGH almost all the top-performers in each indicator have undertaken considerable efforts to lend their support to the environment cause, there are several grey areas which need greening. Most of these companies have adhered to some basic rules by formulating a procurement policy and taking specific initiatives to ensure that their supply chain is linked to the environment aspect. For example, General Motors and Ford Motors have been pushing their suppliers to get an ISO 14001 certification and some of these vendors have already met with success due to these initiatives. The best global practice requires that polluting process is substituted with a non-polluting one. In such a case, despite outsourcing the process, the transfer of pollution does not figure predominantly in the company's supply chain. The company can even source the process from one of its own company or a joint venture. This will give the company the power to influence the environment performance of the vendor, since the former is a major stakeholder itself. Or else it can take in a competent vendor after verifying his credentials.

Since almost all the top-rung companies have most of the polluting process at their own production plant, the transfer of pollution does not figure predominantly in their supply chain. Some, to their credit, have at least partly (TELCO) or fully (Ashok Leyland and Scooters India Limited) eliminated polluting processes like plating the natural resources consumed at the company's production or assembly plant.

Worldwide there is a decreasing trend in water and energy consumption, use of less polluting energy sources and a shift towards renewable sources of energy. The top companies here have shown an inclination towards the same. Maruti Udyog meets as much as 50 per cent of its total energy requirements from clean gaseous fuels. Similarly Kinetic Motor and TVS Suzuki Ltd. have started water harvesting to meet its water requirement.

In process efficiency, installation of state-of-the-art painting technology to enable a more economic consumption and a shift towards water-based paints are the practices being adopted globally. All top companies have substantially higher paint transfer efficiency along with decreasing trends in paint and primer consumption. But no company has yet shifted to water-based paints. While most companies have been effectively recycling a substantial portion of exhaust from paint process for energy generation to reduce volatile organic compound (VOC) pollution, they are stuck with the idea of throwing the other hazardous wastes like grinding sludge. Even in machining fluids, only coolants are recycled to a certain extent.

Treated wastewater quality of these companies is far better than the applicable standards. With continuous

improvement in the final wastewater quality, very few of them have made an attempt to recycle the wastewater to reduce reliance on the ETP for checking pollution. Most of these companies have in fact opted for better technology in their effluent treatment plant (ETP) design so that they are able to treat the waste in a more effective manner.

As regard to air pollution, these companies have moved beyond the statutes and thus the quality of their air emissions is substantially better than the applicable standards. But they have a long way to go before they can install appropriate control equipment at all such sources which contribute to air pollution. While it is necessary that there be a specific guideline underlining various environmental criteria which have to be followed before deciding the material composition of the vehicles, these companies have yet to chalk out these. Where vehicle and engine design are concerned, some advance technologies have been incorporated to achieve a higher fuel efficiency and better driveability, but they are still to introduce some more features to make themselves more ecocompliant.

In the case of emission control equipment, most parameters are met with incorporation of three-way catalytic converter but there is a need to further improve technology. In emissions, overall design is still to move beyond status even though the emissions are far better than the regulatory norms. While the companies do have an environment department, can flash around the ISO 14001 certification and have taken considerable interest in raising environment awareness of their employees, they need to monitor targets better and push for continuous improvement through a stronger system. The responsibility of the department should not stop at production plant only, rather it should cover sourcing the raw material, production process and development as well as product disposal and recycling. The last aspect is hardly taken care of by these companies.

CSE

Most of these companies have opted for a better technology in their effluent treatment plant design so that they are able to treat their waste in a more effective and ecofriendly manner

Nearly all these companies have taken various steps for increasing consumer awareness. They have developed a transparent information system on the various negative aspects of the automobile like actual emissions, failure of control equipment, changes in emissions characteristics with time. Along with this, they have evolved easy to use guidelines for reducing the emissions and have conducted programmes for providing assistance and warranties through a network of dealers or service stations for proper maintenance of the vehicles during the product-use phase. But there hardly any efforts beyond that.

Despite keenness towards opting for better technology, there still exists a differentiation between developed and developing markets when it comes to so critical an aspect as environment. Automobile emissions are a big public health threat but the companies are still shy of going all out to address this huge problem. ■

KEY FINDINGS OF THE TOP AND BOTTOM COMPANIES

THE TOP COMPANIES

- **Existence of a coherent and comprehensive policy to address environmental concerns**
- **Sustained efforts to keep the consumers informed on pollution aspects of the vehicle**
- **Some initiative towards opting for better technology — more in vehicle design and less in alternate fuel**
- **Heavy reliance on vendors without any specific procurement policy or guideline for their selection**
- **Decreasing trends in water and energy consumption but little effort to increase process efficiency**
- **Partial recycling of hazardous waste**
- **Barely any information on the environmental hazards while disposing of the product**

THE BOTTOM COMPANIES

- **Absence of a specific environmental policy relating to various aspects of vehicular pollution**
- **Hardly any programme or information system to educate the customers**
- **Marked hesitancy in switching to better technology —- both in terms of vehicle design and alternate fuels**
- **No guideline for vendors despite outsourcing a bulk of the components**
- **Contrary to popular practice, increasing trend in water and energy consumption**
- **Little or no effort to recycle waste material**
- **Scant regard to pollution with respect to product disposal**

MATIZ

Make way for the leader

With an eye on the sky and feet firmly on the ground, Matiz has zipped past all others to be on the top of the lot

ANANDA BANERJEE / CSE

AN OVERALL impressive track record with a huge emphasis on advanced technology, Daewoo Matiz has beaten hollow all others in the segment to emerge as the most desirable option. Launched just three years back, this comparatively new product was pitted against a hoard of competitors — Maruti 800 and Maruti Zen as old favourites and Hyundai Santro, Telco's Indica and Fiat Uno among the new comers. But the compact and clean car has propelled itself to a position of envy with a sound vehicle and engine design incorporating some of the best features of the latest technology. Since this first-rate product has been designed keeping in mind the ground realities, it is well suited to Indian conditions. For instance, Indian fuels have a higher gum content which often clog the fuel injectors. Matiz has evolved a perfect solution to the problem by providing a big hole, instead of the regular four small-sized ones to reduce the chances of injector choking.

Similarly in a scenario, where fuel adulteration is very common, the air-fuel ratio needs to be flexible to incorporate the fuel quality. Matiz is the only vehicle in its class to have installed a knock sensor which takes care of this aspect and therefore enhances the drive-ability performance. Even in the fuel injection system, it is a step ahead of its counterparts in terms of technology.

Even with a 796 cc engine, the car produces power almost equivalent to the 1000 cc vehicles and has a high mechanical efficiency. Even its fuel efficiency at 15 km per litre is fairly decent and there is substantial scope of increasing the fuel efficiency by lowering the unladen weight of the vehicle which is currently 800 kg, about 100 kg more than the vehicles of similar size.

The material used in the construction of engine parts in Matiz also reflects the use of a better technology. Instead of going for the old metal-based intake manifolds which are being used by majority of the cars and utility vehicles, Matiz uses optical finished polymers which improves the engine breathing and reduces pumping losses. The car has also installed all necessary control equipments which are technologically superior to the other vehicles in the segment. It uses a three-way catalytic converter, but relies less on it for reducing emissions. With the installation of an oxygen sensor, the car is able to ensure a more precise control on air-fuel ratio. Similarly, incorporating electronically controlled exhaust gas recirculation system and evaporation loss control device have been effective in further checking the level of emissions. And on an average, its emissions are 66.4 per cent better than Euro II standard. All in all, Matiz can be termed as an all-rounder within its segment. ■

MARUTI 800 EURO II

Small wonder

The oldest in the small car segment still holds fort. Maruti remains good value for money

CARVING out a big niche in the small-car segment, is no mean achievement. Since it first hit the roads last year, Maruti 800 Euro II model has grabbed the lion's share of the Indian auto market by striking a good compromise between economics and environment. The car has been rated the second best primarily because it scores consistently in all aspects of the environment, from engine and vehicle design, pollution control equipment to actual emissions. This is in stark contrast to other vehicles, which have balanced their good performance in one sphere with the bad in the other. The product has been designed keeping in mind the requirement of the middle-class population of the country which wants mobility with less cost. Apart from being relatively inexpensive, Maruti 800 (Euro II) is also less of a gas guzzler. It has a fuel efficiency of 16 km per litre, which is higher than even its Euro I version and can be contributed to low vehicle weight (695 kg) and high compression ratio. Like Matiz, it has just one hole per cylinder keeping in mind higher gum content of Indian fuels. However, since it has low injection pressure compared to Matiz, the capability of the injectors in providing homogeneous and atomised air-fuel mixture is also reduced. Despite having the same engine size (800 cc), Maruti has lower engine efficiency. Compared to the top product, it also lacks knock sensors and conventional metals are used as construction material for all engine parts. Maruti has installed all the necessary pollution control equipments and, therefore, scores very high in this aspect. However, looking at its catalytic conveter design, which has 30 per cent higher loading than Matiz, it seems that Maruti relies more on it to meet emission norms. It also has exhaust recirculation system and evaporation loss control device — both of them controlled electrically to reduce the emissions. In actual emissions, Maruti 800 (Euro II) has its emissions 72.3 per cent better than Euro II standard. ■

WEIGHTED SCORE (percentage)
Vehicle and engine design: **49.64%**
Emission control systems: **53.81%**
Emissions: **72.26%**
Overall: **54.4%**

SANTRO

Zipping ahead!

It may not be the best, but has a big appeal. For those wanting to break the tradition in the small car segment, this Hyundai product offers a good option

THE debut vehicle of Hyundai Motors is immensely popular with the customers despite being a relatively late entry here in 1998. Santro's success is pegged on the comparatively low fuel cost and a high reliance on pollution control equipments, making it the third best in the small car segment. The product sports only some modern engine design aspects and in that sense it is slightly more conventional that its coveted counterpart Matiz. It is, however, fitted with all necessary emission control systems except exhaust gas recirculation (EGR). The car's emissions are overall 76.25 per cent better than what the existing Euro II standards prescribe.

Even though its material composition does not reflect the use of advanced technology and contributes to greater environmental load unlike Matiz and Maruti 800 Euro II, Santro still is the most fuel-efficient product with an average of 17 kms per litre. Its high unladen weight at 835 kg also greatly needs reduction even though it has recorded an above average performance in geometric design. It has the smallest and the most compact cylinders of 250 cc each but an average compression ratio and is average in mechanical efficiency.

Though Santro has all required sensors, it misses out on the knock sensors — a must for both better fuel efficiency and better driveability. It still places a high reliance on pollution control equipments since its three-way catalytic converter is fitted with conventional oxygen sensor. In other words, its engine is incapable of reducing emissions in case the pollution control equipments fail. But Santro scores high because its actual emissions have a lesser amount of pollutants like CO, HC and NO_x, compared to the other two cars. Though the vehicle produces substantially higher level of noise, low fuel cost remains the buzz word. ■

WEIGHTED SCORE (percentage)
Vehicle and engine design: **49.4%**
Emission control systems: **36.14%**
Emissions: **77.51%**
Overall: **51.3%**

HERO HONDA SPLENDOR

Substance over style

A LITTLE fine-tuning, a minor face lift — and a leader is born. Apart from being the largest selling vehicle in the world, this second model of Hero Honda has a specific agenda and is better geared up to face the green challenges. In its Splendor version, the new product incorporates majority of the features of the CD 100, except for some cosmetic changes for better adaptability to the Indian scenario. The four-stroke bike has been rated with an overall score of 40.7, the best in the segment with a good compromise between size, performance and environment. Certain features have been incorporated in the engine design to meet the Bharat 2000 norms but still the two-wheeler has much scope for improvement. The carburettor has been modified, secondary air injection has been introduced and compression ratio changed, making it more efficient. A resonator for reducing noise has also been added, making the ride a more pleasurable experience. Hero Honda Splendor scores 36.5 per cent in vehicle and engine design to rank an enviable second among its segment in this parameter. It has a comparatively low fuel cost with second highest fuel efficiency at 77.30 km /l. The compression ratio of Splendor is better than CD 100 at nine, which tantamounts to lower maintenance cost. Some other features of the motorcycle include manual transmission, carburettor fuel supply system, dry air filter but these are more or less common to almost all the other bikes. Where it scores better than other is in emission control systems. It is one of the two four-stroke two-wheelers in India to introduce this feature and this makes for better fuel utilisation and low HC emissions.

It also makes the vehicle a better choice with a score of 29 per cent. In terms of actual emissions, the Splendor is 67.7 per cent better than the regulatory norms and ranks 4th. Its

HERO HONDA CD 100

Milestone in mileage

FAR back in 1985, Hero Honda CD 100 was the first four-stroke bike to take a tentative step in the Indian market. Since then it's going great guns. The product has been rated the second best model behind its new avatar — the Splendor — among the two-wheeler models. CD 100 has introduced only some minor changes in its appearance and engine design since its launch and these are basically to comply with the existing norms rather than spearheading initiative. Nonetheless, the bike rides high on popularity. It scores 34.80 per cent in vehicle and engine design to rank third among others in the segment. The high score in this parameter is primarily because CD 100 is the most fuel efficient bike with an average of 81.7 km per litre. This advantage of fuel economy is because it has the least weight among all the four-stroke motorcycles. However, its compression ratio is just 8.8, which is much lower than the best TVS Suzuki Fierro at 9.4. Its other features like manual transmission, carburettor fuel supply system and dry air filter indicate nothing above the normal practice. In case of emission control system, CD 100 top ranks with a score of 29 per cent. This bike, along with Splendor, are the few models to have some sort of control equipment An air injection system along with closed loop positive crankcase ventilation (PCV) system has been provided in this product but other than that it is not fitted with any other control gadget. Where the question of actual emissions arises, the vehicle is 72 per cent better than the regulatory norms and ranks 1st among all the bikes. The CO emission is .62 gm/km, while HC and NO_x together form .95 gm/km. The product also has the lowest CO_2 emissions with 26 gm/km and commands greater respect in this aspect than its other counterparts. ■

WEIGHTED SCORE (percentage)

Vehicle and engine design: 34.80%

Emission control systems: 29%

Emissions: 72.9%

Overall: 40.6%

THE BIKE RACE

Hero number 1

IT MAY not be the most powerful or the very stylish. But as the most user-friendly bike, Hero Honda has sped far ahead in the race for market capitalisation. Sporting an economical and optimised vehicle design, the product has scored an impressive 40.7 per cent to push contenders like Bajaj Boxer, LML Energy and TVS Suzuki Fierro on the side track. Light and high load carrying capacity are some of the best features of this vehicle, which has also taken a lead in reducing the pollution level by introducing an emission control system, something which others have not done so far. This makes the

	Hero Honda
Vehicle and engine design	35.9
Emission control systems	28.9
Emissions	70.0
Fuel Efficiency (km/1)	79.5
Overall	79.5%

CO emission is .78 gm/km, while HC and NO_x is .98 gm/km. The product has CO_2 emissions more than CD 100 which is 27 gm/km. ■

WEIGHTED SCORE (percentage)

Vehicle and engine design: 36.5%

Emission control systems: 29%

Emissions: 67.7%

Overall: 40.8%

bike an extremely attractive buy as it gives the best mileage of 79.5 km per litre while LML Energy is the worst with 60.0 km/l. Both these bikes along with Bajaj Boxer have been designed more for utility and places less emphasis on power and style. In fact, it is only in the case of TVS Suzuki Fierro, where power and not economy is the driving force. Since it is the heaviest vehicle it also compromises on fuel efficiency. Even then at 69.0km/l, it is only marginally worse off than Bajaj Boxer (71.0) and a far better option than LML energy (60.0). TVS Fierro's major highlight is the high compression ratio, which contributes to a greater engine efficiency as compared to others which score more in terms of load carrying capacity. But all these bikes barring Hero Honda, puff up a high level of fumes but have exhausted measures to tackle the green issues. ■

Bajaj Boxer	LML Energy	TVS Suzuki
37.6	32.9	30.9
0	0	0
58.6	65.6	66.30
58.6	65.6	66.30
35.0	33.1	32.0

VIKING

Riding high

Safe, sound and stable...Viking makes a mark on the road

VIKING, Ashok Leyland's CNG-powered bus, has emerged as the clear leader in the mass transport segment. The bus is fitted with a three-way catalytic converter that can simultaneously remove all major pollutants — carbon monoxide (CO), hydrocarbons (HC) and oxides of nitrogen (NO_x). It achieves this by reducing the NO_x to nitrogen and oxygen, while oxidising the CO and HC to carbon dioxide (CO_2) and water vapour.

The converter has an oxygen sensor that monitors the oxygen content in the exhaust and passes this information to the electronic control module for the necessary correction in air-fuel mixture. This results in maximum conversion of pollutant in the catalytic converter.

The vehicle is very ecofriendly because of low emissions. Its CO emissions are 2.92 per gramme per kilowatt hour (gm/kwh), NO_x emissions are 2.91 gm/kwh, while its particulate matter is nil. Its high compression ratio of 11.5 and compact cylinders translate into greater fuel economy. Its high gross weight per unit displacement of 2.7 kilogramme per cubic capacity. Generally, this is used as an indicator of the power of an engine. The higher the displacement ratio, the greater the capacity of the engine to take a heavy load. Engine efficiency is further honed by the vehicle's closed loop electronics control, second only to a computerised one.

At present, the Viking is the pride of the pack. ■

LPO 1510 CGS

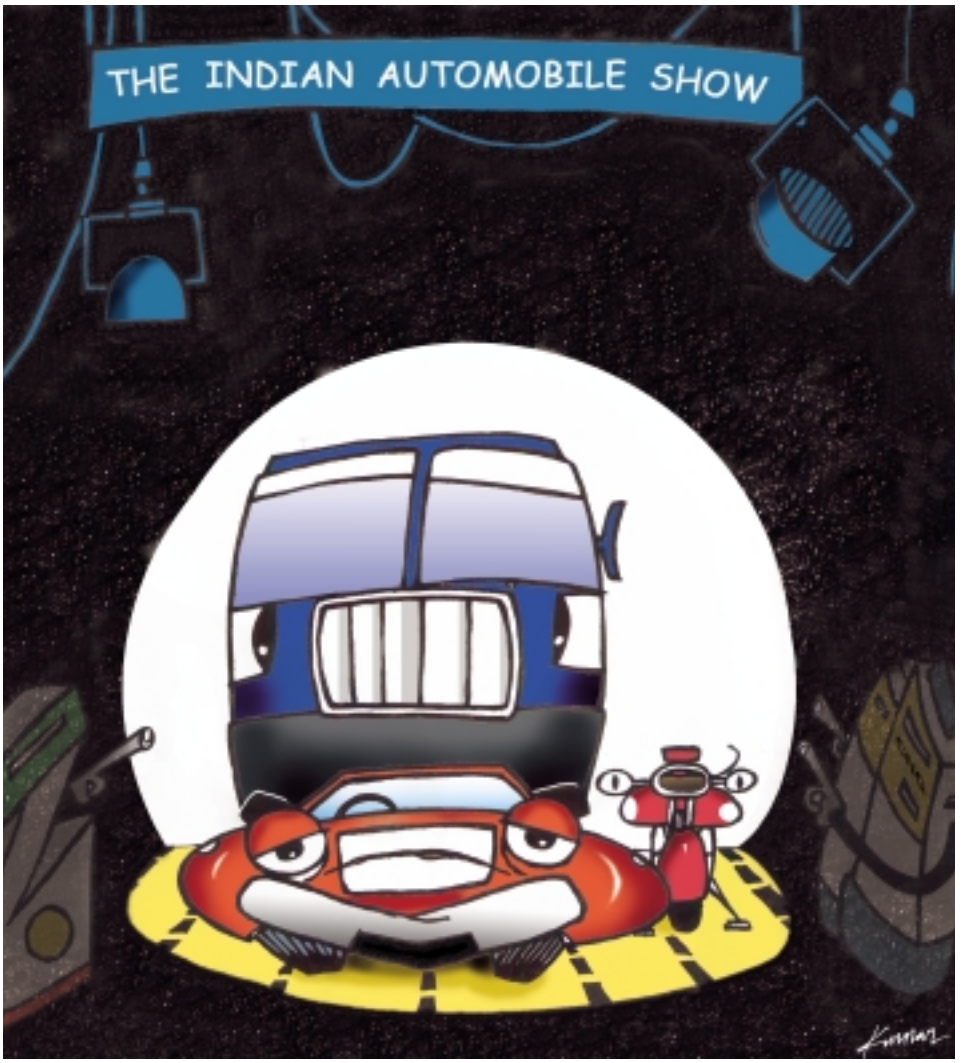
As light as gas

The most fuel-efficient mass transport vehicle comes a close second

AMONG THE vehicles that dot Delhi's roads in the aftermath of the Supreme Court's ruling to convert diesel buses to compressed natural gas (CNG) is Tata's LPO 1510 CGS bus. The vehicle gets the second position in the ratings and has several advantages.

The bus has scored the highest points in fuel efficiency criterion, which translates into low fuel cost for the consumer. This is also due to its small and compact cylinders and its high compression ratio of 10.5. It has a high gross weight per unit displacement (2.53 kg/cc). It also has a closed loop electronics control.

As far as emissions are concerned, the model scores very high. This is due to the inherent advantages of CNG. Its carbon monoxide (co) emissions are 1.68 gramme per kilowatt hour (gm/kwh). NO_2 emissions are 3.42 gm/kwh and particulate matter is just 0.03 gm/kwh. Its green initiative has helped in reducing the pollution and indeed given the capital a breathing space. ■



BEYOND REPAIR?

The Indian automobile industry has come of age. But in terms of corporate environmental management, even the giants prefer to remain greenhorns. Companies are aware that the automobile industry is one of the most poorly regulated sectors in India. And they have used every lacuna in the law to their advantage. To a large extent, they have been helped in their ignoble cause by the Union government, which has turned a blind eye to the increasing vehicular fleet and the resulting pollution.

The Green Rating Project (GRP) subjected the sector to a rigorous scrutiny and found them wanting in more ways than one: multinationals dump obsolete technology with impunity; the small-scale sector has been burdened with the polluting processes and subsidies are milked for the rich. GRP found that the bumpy journey through the life of a vehicle is steeped in pollution — from the engine to the exhaust pipe. And there are hardly any shock absorbers.

Passing the muck

Vehicle manufacturers conveniently outsource most of their polluting processes

RUSTAM VANIA / CSE

WHEN it comes to pollution at the workplace, automobile companies explain it away by flashing ISO 14001 certificates. What escapes unnoticed is the fact that they delegate most of the dirty work to vendors.

GRP has unearthed this startling fact after conducting an extensive research on various aspects of their production supply chain in India. The exercise has driven home the point that automakers should be held accountable for the polluting activities of their suppliers.

Statistics, too, lend weight to the need to analyse afresh the production-stage emission issue: each vehicle is made up of approximately 15,000 parts. More than 80 per cent of these components are outsourced from the small-scale sector, which lacks the resources to employ ecofriendly technology. This is where automobile manufacturers have a role to play.

Till now the focus of the procurement policy of these companies has been on quality and economy. Only a handful of them have worked towards greening the supply chain — an aspect that has been confined to the academic realm.

Out of site

Vehicle production can be broadly broken up into primary and secondary stages, of which the former is more polluting. On an average, manufacturers are dependent on suppliers for 88 per cent of the primary inputs. This includes key components that require only finishing operations such as engine block, cylinder head, piston, camshaft, chassis, brakes and gear sets.

It has been found that 13 companies completely outsource their primary parts. Consequently more than 80 per cent of pollution is generated at the vendors' site and 20 per cent at the automakers' production plant.

Electroplating, heat treatment, machining and surface finishing are some of the operations that take place in the secondary stage of manufacturing an automobile. Here vendors are involved in 80 per cent of the process and responsible for generating 68 per cent pollution, the automobile company causing the remaining 32 per cent. Almost all companies either completely or partially outsource their plating requirements.

Sanitising the supply route

To reconcile the contradiction between process optimisation, commercial gains and transfer of pollution by automobile companies to the small-scale sector, GRP calibrates the pollution transfer index (PTI) — a factor of the percentage of components outsourced and capability of the vendor to deal with pollution. The project seeks to strike at the root of the problem, compelling the industry to look beyond the confines of their production plants.

- As a first step, manufacturers should fine-tune their procurement policy. The company must clearly spell out the commitment it wants from its vendors. For instance, it can make ISO 14001 certification mandatory.
- The automaker's procurement department should be restructured, with a technically qualified person monitoring the suppliers' environmental performance.
- The department must provide the dealers with support and incentives to ensure compliance.
- The companies should strive to substitute their polluting process with an ecofriendly one. This can help rein in pollution levels at the production stage despite outsourcing.
- Automobile majors can source processes from one of their own concerns. Being a stakeholder, they will have a say in the vendor's environmental policies.

The inside story

The number of polluting processes inside the automobile assembly plant is limited. Painting, machining, finishing, incineration and the effluent treatment plant itself are the major sources of pollution. Energy is a major input, which causes pollution in the upstream processes involving generator, boiler, power plant and the like. Consumption of oil, lubricants, coolants and solvents contributes to the toxic and non-biodegradable pollutants from the plant.

In absolute terms the production facility of the automobile sector creates far less pollution than those of other manufacturing industries (pulp and paper, iron and steel and textiles). But GRP found that its overall environmental performance leaves much to be desired.

Consumption efficiency

- Automakers draw 91.3 per cent of their energy requirements from polluting fossil fuels such as coal, diesel and furnace oil. Only 8.7 per cent of the total energy consumed comes from liquefied petroleum gas (LPG), compressed natural gas (CNG), propane and other such green fuels (see chart: *Pollution at the plant*). Of the 26 concerns rated, 14 were seen using 100 per cent polluting fossil fuels. But encouraging trends have emerged over the past three years, pointing to a concerted effort by 75 per cent of the companies to cut their spe-

Buyers beware

Vehicles don't come with a statutory warning printed on them. But they too emit smoke

Automobiles impact the environment most when the consumer is at the wheel. But not many buyers accord priority to the ecofriendliness of their cars. According to the GRP evaluation, this ignorance is inextricably linked to the industry's ecologically unsound policies. Automakers are not making a concerted effort to educate the end-users about vehicular pollution.

The consumer manual can be an ideal primer for communicating the green message. But manufacturers provide limited information on reducing emissions during product use in this document. Though some passenger car and commercial vehicle companies have made a passing mention of the environmental facet, units making two and three-wheelers are the worst performers in this regard.

The concept of listing visible environment-related cautions and warnings on the manual has not yet arrived in India with the entire sector performing poorly.

Half the companies rated have neither published any newsletter for the consumer nor released a public advertisement to enhance environmental awareness. Even those who have done so have tried to promote their products by giving them the green label.

Automobile manufacturers steer clear of mentioning the negative ecological impact of their products. As many as 80 per cent of the companies have never cared to divulge any information on vehicular emissions.

No measures have been taken by the industry to encourage proper maintenance of vehicles except the free servicing offer to consumers for the first couple of years of the product's life. After this period, expensive service packages deter users from making regular visits to the workshop.

"Only when some major repair work is required do I visit the authorised service station. Otherwise, I go to the one located in my neighbourhood," says Pawan Goel, the owner of a Maruti Esteem. He points out that the latter is "unauthorised but dependable". The

cific energy consumption.

- The industry is not a major consumer of water and, therefore, does not seem to be addressing this problem seriously enough. Despite this, 62.5 per cent companies have decreased their specific water consumption. The concept of sourcing water through harvesting has not yet arrived in the sector across the globe. India is no exception. As much as 75 per cent of the total requirement is met from ground water.

Process efficiency

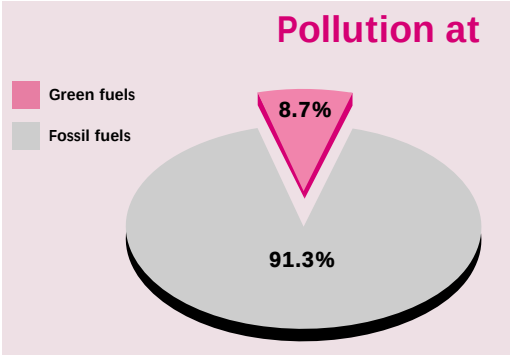
- Auto companies use a substantial portion of new metals in their casting operations (see chart: *Pollution at the plant*). Currently, only about 25 per cent of the metals used in foundry and aluminium dye-casting are recycled. Most manufacturers use 20-30 per cent scrap. This trend has been constant for the past three years.
- Non-biodegradable metal working fluids and solvents are very commonly used in the assembly plant. Currently, few companies are recycling their lubricants. Tri-chloro-ethane, a solvent used for finishing operations and facility clean-up, is a known carcinogen and has been banned in the West. It is, however, commonly used in India. Another environmental problem is the disposal of grinding sludge. Most of the companies claim to be either storing this waste or selling it without any further follow-up.
- Though almost all the companies use components with heavy metal plating, monitoring of heavy metals in wastewater is not practiced in India. Heavy metals such as lead, tin and chromium are indispensable parts of a vehicle but extremely toxic. Prolonged exposure of workers to these can seriously affect their health.
- The global paint industry is in the midst of a green revolution, but this makeover seems to have been overlooked by the Indian auto sector. Vehicle manufacturers continue to use solvent and heavy metal-based paints instead of water-based ones. The paint transfer efficiency of the Indian companies is less than 50 per cent, which means more than half the paints consumed go waste.

That the majority of them do not monitor volatile organic compound (VOC) emissions is a cause for concern. VOC is a major pollutant which can, however, be recycled for energy generation. This, too, is not being done. Manual painting, perceived to enhance the look of the vehicle, is still in vogue in the industry. Close to 50 per cent of the companies have recorded a surge in the use of paints and primers during the past three years.

All at sea

A square peg in a round hole would succinctly sum up the state of wastewater management at the automobile production plants. Even as most of the wastewater discharged is chemical in nature, nearly all companies have installed biological treatment systems wherein sewage waste is mixed with process waste and then treated. The result: chemical dosing in the biological plant, causing acidification of wastewater. Regulatory standards in this context have been found to be lax and irrational. Segregation of wastewater in terms of level of pollution is also not undertaken.

The average efficiency of effluent treatment plants (ETPs) is 48 per cent. This indicates that the difference between pre-treatment and post-treatment wastewater quality is 48 per cent. The automobile sector has achieved a score of 39.7 per cent in water pollution.



Air travails

If not monitored, incinerators can pose

The number of production processes inside the plant is limited. GRP found that despite this,

price factor also works as a deterrent. "At the authorised unit, the servicing cost is more than double of what I pay at the local repair shop," he says.

"Trained humanpower, genuine spare parts and professional aftersales service push up costs. Customers who care for their cars will not be guided by the price factor," Ashok Sharma, senior manager, Saket Motors, Delhi-based authorised dealer for Honda Siel Cars Limited, contends. Ravi Patel, director of Patel Auto Services in Delhi, also justifies the high cost. "We are more expensive because of the standards that we maintain here." Patel is the authorised dealer for Mercedes Benz India Limited.

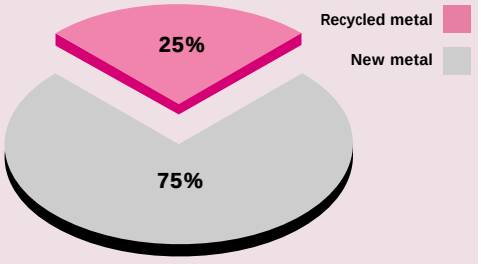
Automakers do not have training or orientation programmes on raising environmental awareness for their dealers and distributors. Though some of them did say they were undertaking fuel-saving training drives, their claims could not be verified.

On their part, consumers too can make a contribution. They should take into account the environment policy of the manufacturers before making the purchase decision.

Vivek Kalra, the owner of a Daewoo Cielo, feels there should be more awareness campaigns to keep consumers informed about the environmental aspect. "Since an ecofriendly car is also more economical (read fuel efficient), the green factor can influence the buying decision," he feels.

Clearly, the economics-environment connection needs to be brought forth to involve the users in the green campaign.

the plant



a problem themselves. No company has kept tabs on incinerator emissions as they seem content merely with its installation.

Several plants also have high capacity diesel generator sets. Here, too, no emission control devices are in place. The automobile industry has managed 30 per cent — a dismal score — in this category.

Solid mismanagement

The absence of coherent norms to handle solid and hazardous wastes has resulted in the sector getting 25.5 per cent. Of the total solid waste generated, 48.30 per cent is land-filled, 2.3 per cent reused or recycled, 13.9 per cent is sold, 27 per cent is sold but end-use not kept track of and 8.5 per cent is incinerated.

Forty-six per cent of hazardous waste is land-filled, 10 per cent sold to contractors without any follow-up, while approximately 45 per cent is incinerated and emissions not monitored.

Greening the plant

Despite delegating most of the polluting processes to vendors, the overall environmental performance of the automobile companies at the production plant has been far from satisfactory. Remedial action — both short-term and long-term — is the need of the hour.

- Vehicle manufacturers should switch over to clean gaseous fuels such as LPG and CNG to meet their energy needs at the plant.
- With vast tracts of land at their disposal, rainwater harvesting can be a viable alternative to cater to their process water requirements.
- Recycling can help reduce the use of new metals in their casting operations.
- Automakers should opt for water-based paints instead of solvent and metal-based ones.
- It is not enough for companies to instal pollution control devices such as incinerators. A close watch must also be kept on the emission caused by them.
- Authorities should lay down proper norms for solid and hazardous waste disposal, clearly stressing the importance of reuse and recycling.

On the whole, the automobile sector needs to look afresh at the issue. Prevention rather than cure can help nip production-stage pollution in the bud. ■

the overall environmental performance leaves much to be desired

KUMAR

Top performers

The sector gets 30.4 per cent in its environmental performance during production

SUPPLY CHAIN

Procurement policy

General Motors	64.0%
Ford Motors	56.0%
Hero Honda Motors	52.0%

Sourcing

Scooters India Limited	43.5%
Ashok Leyland	42.6%
Telco	41.1%

AT THE PLANT

Consumption efficiency

Maruti Udyog Limited	62.5%
Kinetic Motors	56.7%
Hero Honda Motors	51.0%

Process efficiency

TVS Suzuki	68.0%
Hyundai Motors	65.8%
General Motors	60.3%

Pollution management

Bajaj Auto	50.9%
Telco	46.3%
Eicher Motors	45.8%

Inspectors' perception

TVS Suzuki	47.3%
Mercedes Benz	47.1%
Ford Motors	46.7%

OVERALL LEADERS

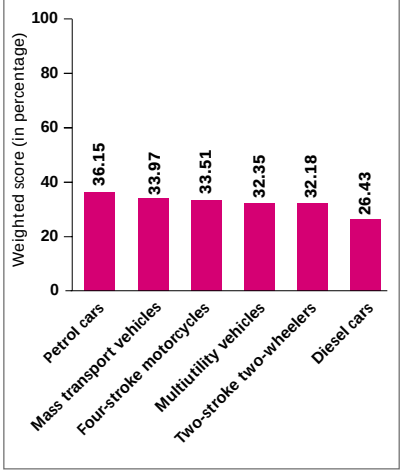
General Motors	44.4%
Telco	43.5%
Hero Honda Motors	42.7%

Engine trouble

The Indian auto industry has got stuck with obsolete engines. It needs a jump-start

IT'S THE core issue and it's also one part of the vehicle the auto sector refuses to think about or invest in — the engine. No wonder GRP found the engines in most vehicles, across all three segments, falling far behind the best available. GRP searched hard, analysing numerous characteristics of the engines rated but could not find the Indian automakers passing the test on any count. What GRP did notice was the automotive industry's sleight of hand — they prefer to make cosmetic changes for visible and immediate results, spend on introducing snazzier models and just meet the emission norms rather than strike at the heart of the problem.

Poor performance...
...in engine and vehicle design



Running on empty

The Indian auto industry's so-called thrust on emission control equipment is a mirage

The auto industry focuses on pollution mitigating devices instead of improvising and improving on the basics of the engine. That is the general impression. But, the emission control equipment companies instal, even on the latest models, is not the best available. It barely passes the tests and the scrutiny of the unsuspecting consumer. It couldn't fool the GRP rating process though. They looked deeper into the issue and found the industry's reluctance to provide technological advantage prevalent here too.

Take the case of the catalytic converter. It is now commonly used in petrol cars, two-stroke two-wheelers as well as some diesel

Global vs local

Engines in India lag far behind the ones made abroad

Engine evaluation parameter	Consequences of improvement in the parameter	Best global	Theoretically best	India's best possible	India's average
Compression ratio in petrol engines	Higher ratio enables use of cleaner fuels like unleaded gasoline, eliminating toxic toxic lead pollution	10.5	13	9.4	9
Compression ratio in diesel engine	Global trend is to lower the ratio. Lower ratio means decreased emissions of hydrocarbons and nitrogen oxides	16	13	18	21.5
Transmission	CVT increases fuel economy and reduces emissions	Continuously Variable Transmission (CVT)	–	Most companies still stick to manual transmission	

The simple reason for this is not a shortage of money but a lack of commitment towards improving engine technology. The companies are unwilling to invest in the engine, as they are able to get away by investing in things like pollution control devices. And there is little indigenous research and development, either by the industry or the government for the sector to depend upon. The consequences for the industry are the poor GRP report card they have to show to their customers (see graph: *Poor performance...*)

The general conclusion that an average vehicle owner can draw from the GRP rating is that the engine he revs up is technologically a decade behind the best. And it is not only the owner who suffers. While he may not enjoy the zip in his drive the entire society ends up coughing and wheezing because the auto sector will not do its due and go for the best — increased pollution is the price the country pays for the sector's follies.

Designed to pollute

One need take only a single look at the engine design of various vehicles studied during the rating and compare their performance on numerous parameters to realise that the West has outmanoeuvred the Indian auto sector by a mile (see box: *Global vs local)*.

A parameter that shows up the lag in Indian engine technology is the 'compression ratio '. It is a crucial engine concept that decides how much fuel the vehicle will guzzle and how much emissions it will spew. In case of petrol vehicles, a decrease in compression ratio

cars in India. But the catalytic converters put to use today in India were designed a decade back in the West. They have been greatly improved upon since then, but the cars that swish around on Indian roads continue to be the archaic and obsolete machines of yesteryear.

All petrol passenger cars are fitted with three-way catalytic converter. Two-stroke two-wheelers and diesel passenger cars are fitted with oxidation catalysts. Catalytic converters are absent in other automobile segments like diesel-fuelled mass transport vehicles and four-stroke two-wheelers.

But the state of the art early light-off catalysts are yet to hit the Indian shores. And of course, there is no indigenous technology to supplement in their absence. The early light-off catalytic converters work better under Indian traffic conditions which demands constant braking and speeding.

In the petrol passenger car segment, the majority of the vehicles use catalytic converters that do not suit the engine design. All the spark ignition (petrol-based) cars have single HEGO sensors, which can only supply air-fuel ratio of two fixed values; one rich and one lean. It cannot change the air-fuel ratio based on the driving condition, thus driving down fuel efficiency and increasing pollution.

There are numerous other observations with which GRP's analysis of the auto sector has removed the veil of confusion. It has reiterated the simple fact staring the industry in its face: shape up or be ready to be shipped out by an increasingly vigilant society.

Whither research?

Automakers lack will, not resources, to fund research

The auto industry refuses to invest in research and development of technology that suits the Indian conditions. They do not lack the resources to do so. They lack the commitment. Investment in research seems to be a pittance when compared to the massive revenues they generate.

Consider this, General Motors spent US $176.55 million or 3.8 per cent of its turnover on research and development in 1999. The Indian auto giant, Maruti Udyog Limited, on the other hand, spent just 0.87 per cent of its total turnover which was much less than that of General Motors in absolute terms too.

If one considers just research and development in cleaner technologies, the data to show how much is invested just does not exist. Overall the sector has shown little interest in introducing cleaner vehicles. They are happy to meet the existing Euro II standards. Around 31 per cent have minor plans to introduce better technology, which means mainly improving existing vehicles to Euro III. In the two-wheeler segment, moving to four-stroke engines remains the future target.

In contrast to the Indian auto companies are the multinationals that have conducted research but refuse to share the fruits of it in India. Their excuse, and an indefensible one at that, is poor fuel quality and lack of consumer purchasing power in India. But as GRP ratings have shown, these companies continue to treat India as a dumping ground.

The auto sector needs to put their money where their mouth is, not shortsell the consumer and public health. Else, social audits like GRP will continue to show them up for what they are — cash cows that act bovine when it comes to spending on cleaner technology and care more for their fat purses than public health.

Driving on contradictions

The auto industry will not admit it, but it's aware: if the emissions are too high, the problem area is under the bonnet

Fuel quality — it's the bogey auto sector has raised every time it has been hauled up for spewing tonnes of pollutants. The industry has consistently taken the public stance that poor fuel quality and fuel adulteration in India is the reason behind high emissions from the vehicle and the attendant medical nightmares that strike the society. The auto industry consistently demands low sulphur fuel for the catalytic converter forgetting to mention that fuel alone makes little difference to the engine efficiency.

And if one was to look deeper, as GRP did, it would become evident that either the industry members do not have the proof to back their claim or worse still, have research that proves just the opposite — it's the engine that matters most.

To understand the issue, GRP had requested companies to provide information on the studies they have undertaken to establish the impact of fuel quality on emissions. The result: 21 out of 26 participating companies had not carried out a single study on the impact of fuels on emissions. The data collected by the rest five companies showed how inconsistent the data trend was to prove the linkage between fuel adulteration and fuel emissions. In fact, in tests conducted by one Indian auto major diesel was adulterated with as much as 50 per cent kerosene, the emissions from the vehicles using the adulterated fuel rose minimally. Carbon monoxide emissions increased by about 10 per cent and particulate matter decreased by about 10 per cent, with no measurable influence on hydrocarbons and nitrogen oxides. Similar inconclusive trend was found in case of the petrol vehicles as well.

Evidently, the automobile sector's excuse does not stand up to scientific scrutiny. Automobile sector needs to admit to itself and to the pubic that the vehicles they produce today are unwittingly becoming the engines of the devils and the only way out is to drastically improve the fundamentals of the engine itself while getting the cleanses possible fuel.

leads to a decrease in the emissions of hydrocarbons and nitrogen oxides (HC and NO_x), though it also leads to the decrease in the fuel efficiency of the vehicle. However, higher compression ratio in petrol vehicles enables the use of low octane fuels such as unleaded petrol, which eliminates toxic lead pollution. For a diesel vehicle, the lower the compression ratio, the better it is.

Considering how important it is, one would believe that at least on this count the industry would try to keep up with the world leaders. That is not the story though. Today, the best compression ratio achieved across the world is 10.5 for petrol vehicles and 16 for diesel. However, the Indian auto sector lags behind — the average compression ratio of petrol passenger car remains stuck at 9.0 and that of diesel cars at a high of 21.5. The industry is aware that though the figure may look as a minor difference to the uninitiated, the difference is large enough to establish a technology differential of a decade. The story of multiutility vehicles too is the same. The high average compression ratio of 21.7 recorded in the segment is today considered obsolete.

And this is not the only parameter where the engines that drive Indian vehicles end up losing the race.

DAEWOO

Suspended in time: Engine technology in India is outdated by a decade

Consider the case of the two-wheeler segment. It is flooded with models using two-stroke engine technology, whereas the debate about four-stroke engines being better than two-stroke engines is considered dead today. The four-stroke engine, may be an expensive proposition but is definitely less polluting.

Better than both, the two-stroke and the four-stroke fossil-fuel-based vehicles, are the electric driven ones. But, despite the fact that electric vehicles have zero tail-pipe emissions, they are a rare sight on Indian roads. The only electric vehicle on road is the three-wheeler produced by the Scooters India Limited, which uses electric drive. While across the West automobile industry is experimenting to cross the Rubicon of fossil fuel- paradigm, the Indian industry continues to struggle to get its two-wheeler fleet on to four stroke (see: *Changing gears* on p47) and its four-wheelers on to just the next best possible (though obsolete) alternatives.

While some fault may lie with multinational players who refuse to bring the best to the country, deluging it with the discards of the West (see: *Taking India for a ride* on p49), the Indian giants too are to blame. Little investment is made to modify or develop technology that can suit the Indian conditions (see box: *Whither research*).

If the automobile sector wishes to redeem itself and make a better show during the GRP review two years later, it has a lot of catching up to do. Increased public disclosure about the policies and technologies by social audits such as GRP are bound to raise the awareness to the levels where the industry will truly have to be accountable to the people it earns its millions from. ■

Changing gears

Automakers are realising the advantages of four-stroke engines. But fuel cells and electric vehicles remain the industry's orphans

WHEN Brij Lal Munjal of Hero Honda Motors decided to invest in four-stroke engines in 1984, industry circles thought it was quixotic. This was the time when two-strokes were ruling the roost. But the gamble paid off. Today, he is laughing all the way to the bank. Four-stroke engines have proved to be superior to two-stroke in more ways than one.

GRP has found that emissions from two-stroke engines are much higher than four-stroke engines. For two-stroke two-wheelers without the catalytic converter, the difference in emissions is staggering. On an average, the total regulated tailpipe emissions from a two-stroke two-wheeler without catalytic converter is 2.5 times more than that of the four-stroke two-wheelers. Despite having a small engine size (less than half that of the four-stroke two-wheelers), the average fuel efficiency of two-stroke two-wheelers is 15 per cent lower than that of the four-stroke two-wheelers.

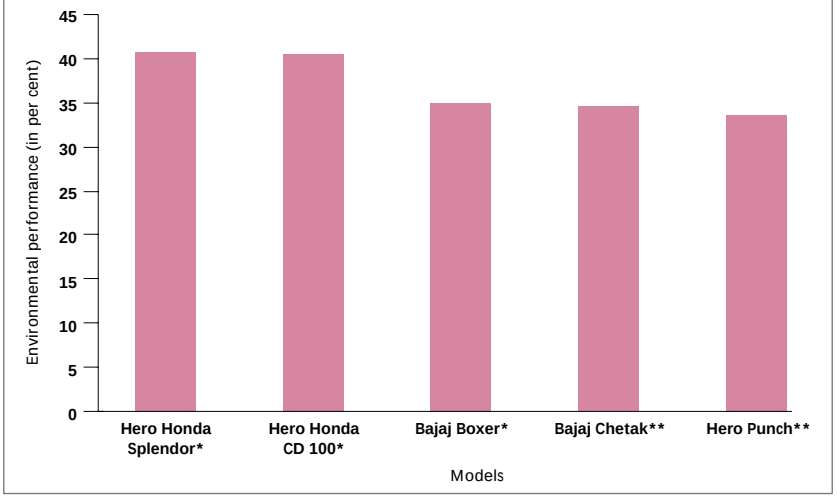
The analysis clearly shows the overwhelming superiority of four-stroke two-wheelers over two-stroke two-wheelers with respect to emissions and fuel efficiency. Still, 60 per cent of the two and three-wheeler segment is two-stroke. Despite the benefits, half of the two-wheeler companies have not taken any initiative to move to lesser polluting options. But some companies like Bajaj have invested in research to control emissions from two-stroke engines. This explains their standing in the top five product ratings. Similar research for four-stroke engines would have revved up their environmental performance.

However, there are better options that haven't made inroads in the auto sector. One of them is the hybrid engine. These use both gasoline as well as fuel cells and emit just half of that of four-stroke engines. Electric vehicles, of course, are the best because they have zero tailpipe emissions. However, none of the companies are moving towards these options.

Electric three-wheelers produced by Scooters India Ltd are one of a kind in India. The proportion of total products produced by a company on various engines (corporate engine performance) is a good indicator to reflect the overall environment performance of the entire product-range of a company. Going by this parameter, GRP found that almost all companies had a poor corporate engine performance record. This is because of their reluctance to invest in cleaner technologies like fuel cells. ■

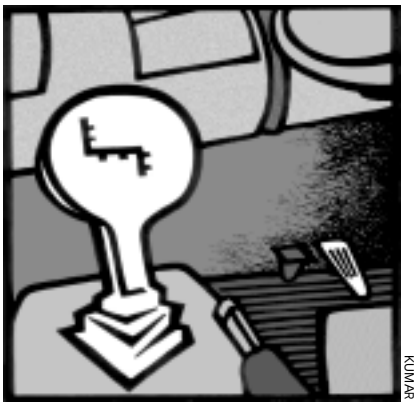
Different strokes

Four-strokes lead the pack. But emission control research propels even two-stroke vehicles into the top five



*Four-stroke vehicles

** Two-stroke vehicles



KUMAR

Reverse effect

Diesel-fuelled vehicles have pulled down the ratings of companies

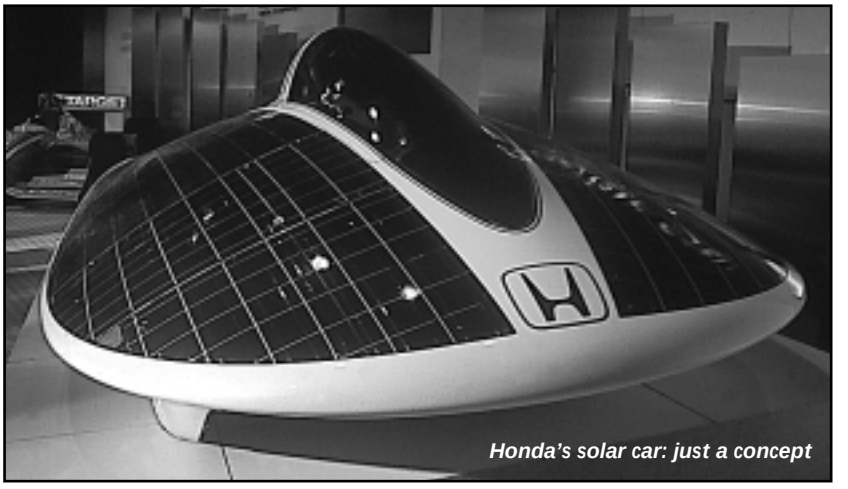
Fuels dictate emissions. As established by a number of international studies, GRP too found the toxicity of diesel emissions far exceed that of petrol emissions. And vehicles fuelled by diesel have left most companies in the lurch as far as final ratings are concerned. Corporate fuel performance — the proportion of total products produced by a company on various fuels — has had a direct effect on the overall environment performance of products of the company. For example, almost all companies that have not done well were the ones that invested in diesel technology.

GRP found that petrol passenger cars are far superior to the diesel passenger cars and multi-utility vehicles (MUVs) in terms of their overall environment performance — the top 14 passenger cars were petrol-driven. Contrary to popular perception, the project found that the carbon dioxide (CO_2) emissions from diesel is about 10 per cent more than that of petrol. And companies that launched models that run on cleaner fuels like compressed natural gas (CNG) improved their ratings. For example, Ashok Leyland marginally improved its position due to its CNG bus.

The reluctance of companies to think beyond diesel and petrol has more to do with the fact that profits dictate policies. The Union government's policy to subsidise a polluting fuel like diesel has encouraged companies to come out with more diesel models — a policy that, in fact, subsidises human life. The only way out of this conundrum is for the industry to become proactive and invest in alternatives. ■

Fuels for the future

Despite being clean, alternative fuels fail to become the first choice



Honda's solar car: just a concept

ALTERNATIVES hold the key to the future of the automobile industry. There is tremendous potential both in terms of performance as well as reduced health risks. But the automobile sector has failed to show any real interest in these fuels. Consider this: the use of alternative fuels can reduce the risk of cancers by as much as 90 per cent. They are much more fuel-efficient and require less maintenance. Yet alternative fuels constitute less than one per cent in the automobile segment. Today there are many alternatives: compressed natural gas (CNG), liquefied petroleum gas (LPG), methanol, hydrogen fuels, electricity, solar energy and bio-diesel. And the advantages are many:

NATURAL GAS: Natural gas exists in the gaseous state at normal temperature and pressure, and is found in two forms: CNG and LPG. Compared to diesel and petrol, CNG causes substantially lower pollution without affecting the vehicle's performance. The exhaust level of CO_2 in a CNG vehicle is about 40 per cent lower than that of petrol or diesel engine. Even sulphur and lead-related emissions are eliminated, as it is absent in the fuel.

Though the self-ignition temperature of CNG is much higher than petrol, it is still safe due to its low inflammability nature. It is one of the cleanest-burning fuels as it emits about 70 per cent less carbon monoxide and has much less ozone-forming potential than standard petroleum gasoline. It is also less expensive than petrol and diesel in India.

LIQUIFIED PETROLEUM GAS: Similar to CNG, the range on LPG is somewhat less than that of comparable petrol-powered vehicles, though power, acceleration, payload and cruise speed are comparable with those obtained with an equivalent internal-combustion engine. Most of the environmental benefits of CNG, including high octane, are present in LPG. In terms of safety, LPG has an advantage over CNG, since its tank does not have to be pressurised and the fuel is stored as a liquid.

ALCOHOL (METHANOL AND ETHANOL): At present, Ethanol is being considered a very viable replacement for the conventional fuels in the Internal Combustion (IC) engines. However, methanol is being considered more for its use in the fuel cells rather than in IC engines. The benefits of using ethanol include its renewable nature and lower emissions than the conventional petroleum based fuels.

HYDROGEN: Hydrogen provides a means of obtaining a portable and clean fuel from non-fossil source and from energy sources such as solar, geo-thermal and nuclear and is considered a very promising candidate. It can be obtained from water using non-conventional energy sources, and thus has tremendous potential to become the cleanest source of energy. It recycles rapidly and cleanly from hydrogen to water. It is a clean burning fuel and provides potential environmental benefits (almost zero pollution). It also provides high-energy conversion processes in almost all uses and is compatible with essentially all energy uses.

A Spark Ignition (SI) engine designed specifically for hydrogen fuel could give efficiencies much higher (up to 1.5 times) than those obtainable with petrol. Compression Ignition (CI) engine operation with liquid hydrogen is the best configuration for development.

ELECTRIC VEHICLES (EVS): They have a clear advantage over conventional fuelled vehicles in terms of nil tail-pipe emissions. EVs have relatively high initial capital cost. However, subsequently the "fuel" and maintenance costs are low. The cost of an equivalent amount of fuel for EVs is less than the price of petrol. Also, maintenance for EVs is less since EVs have fewer moving parts to service and replace.

Alternative technology

Many in the auto industry believe that the era of alternatives to IC engine is about to dawn. This is because futuristic fuel cells engine and electric cars are slowly inching towards commercial viability and hybrid vehicles have already achieved a high degree of success in Japan. Like hybrid, fuel cell is also another ecofriendly option. In principle, a fuel cell operates like a battery. It has the potential to be substantially more efficient than a conventional IC engine. One of the major advantages of fuel cell is that while current internal combustion engines have efficiency in the range of 20 per cent, the fuel cells efficiency is generally above 30 per cent.

There are certain inherent disadvantages in alternative fuels and there is need to promote and develop the sector. But there is no denying that alternative fuel operated on alternative fuel vehicles will soon become a common sight in the automobile industry due to improved efficiency and reduced emissions. While some countries in Europe are moving in this direction, the initiative is yet to gain momentum in India. This is mainly because the industry has not been proactive in switching to cleaner fuels. The blame is also on the Union government, which has played into the hands of the petrol/diesel lobby to frustrate any attempts to bring about any real change. ■

The Union government has done little to promote the use of alternative fuels

Taking India for a ride

Global automakers have topped the charts but with products that would fail the green test in their own countries

ANANDA BANERJEE / CSE

'WHAT's good for the West is too good for India' seems to be the motto driving multinational automobile majors. Or else why would they dump Euro II compliant cars in India, and at the same time introduce their state-of-the-art Euro III and Euro IV versions in Europe and the US?

Sample this. As a part of the rating exercise, GRP collected data from various sources on 10 passenger car models of multinational companies (MNCs) being sold in India as well as the UK. Their Indian versions were found emitting 42 per cent more carbon monoxide (CO) and 68.6 per cent higher hydrocarbons and nitrogen oxides (HC + NO_x). Worse, the MNCs are unlikely to upgrade their technology till 2005, when the domestic emission norms will be upgraded.

To be sure, today's Indian carscape is incomplete without these conglomerates. They have integrated themselves with the industry and fine-tuned it. But project findings for most key parameters reveal that contrary to expectations, they are either only marginally ahead of their Indian counterparts or on a par with them, with their products conforming to the same environment standards. This, in effect, explodes the myth that MNCs would emerge as the vehicle for the auto industry's overhaul.

Alien policies

MNCs have obtained a 17.5 per cent higher score than Indian companies in corporate environment governance and pro-active initiatives, as most of them are certified as ISO 14001 — the benchmark of their green status. Even then it translates into barely 39 per cent. This is because the issues addressed by them are mostly generic and their policies similar to those formulated by their parent companies. The vital modifications for Indian conditions are missing.

For instance, some European carmakers intend promoting diesel vehicles to meet their commitment to reduce greenhouse gas emissions. This may be relevant for the West, where particulate pollution is not very high and the prices of diesel and petrol are same. But in India, the policy can have a disastrous impact on public health. Diesel vehicles emit suspended particulate matter, which is a major air pollutant in urban India. Then there is the question of ethics. Diesel is subsidised and should not be used as a fuel for passenger cars that are owned by the relatively affluent sections of society. The MNCs' low score in terms of corporate environment governance can, therefore, be attributed to their failure to customise corporate plans with an India-centric focus.

Stooping to conquer

Notwithstanding their high overall rating, there is hardly any difference in the scores obtained by MNCs and Indian companies in environmental performance at the production plant and supply chain management. A fact corroborated by GRP's green inspectors, who undertook nationwide site surveys. Domestic players have actually fared slightly better in the production phase. It has been observed that instead of showing the way by using new production technology and encouraging suppliers of components to be eco-friendly, MNCs have conveniently adopted cheaper local practices. Consequently, there is a wide disparity between their plants in the West and those in India. Another example of their discriminatory approach.

Room at the top

Given that MNCs had a head start in terms of capital, technology, reach and number of years in the industry, they were expected to emerge runaway winners. But the best they could manage was 3 leaves — a category in which Indian companies also figured and which was well below the highest honour of 5 leaves. The global players use India as a dumping destination for obsolete technology. This may well be the reason for their average performance.

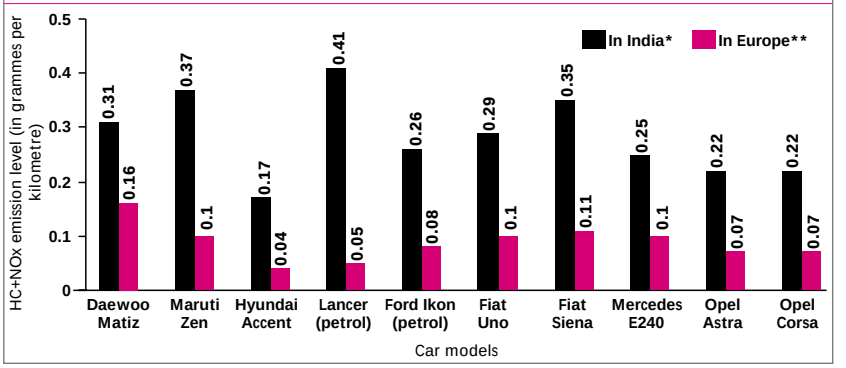
"Our company is different. We are selling the same car in India as well as Europe," contends I K Lee, director, production, Daewoo Motors India. But figures speak otherwise (see graph: *Double standards*).

Some automakers feel hamstrung by local constraints. The latest Euro III and Euro IV models of internal combustion engines cannot be launched in India because of the low-grade fuel sold in the country, they aver. Another green option — hybrid vehicles — known to be successful in developed markets like Japan, is unlikely to attract the Indian consumer owing to the product's exorbitant prices.

When queried on the outdated technology issue, Aditya Vij, managing director, General Motors India Limited, says, "We manufacture cars strictly in conformity with Indian norms." In his answer lies the crux of the problem: India's less stringent environmental regulations that give MNC auto giants a licence to pollute. ■

Double standards

MNCs reserve the more polluting versions of their vehicles for India



*Source: *Emission data from tests conducted by Automotive Research Association of India.*
***Emission data from Vehicle Certification Agency, Bristol, UK.*

TWIN PISTONS

A clean environment always makes for good economics

THE connection is unmistakable. All the top performers in the ratings are also those making huge profits. Those at the bottom are about to close shop. Maruti Udyog Ltd and Hero Honda Motors India Ltd, both in the top 10, are raking in millions, while Bajaj Tempo Limited and Hero Puch, which are lower down, are on their way out. The logic is simple: if a company improves its environmental performance, its profits are bound to increase. And with profits, the company can invest the surplus to further enhance its performance. Environment and profits are closely connected because good environmental management practices demand efficient management of resources, less wastages, less pollution and thus lesser costs.

GRP found the correlation between environmental rating and profits for companies more than 10 years old to be 0.67. This means that there is 67 per cent likelihood that a company with good environment sense will make profits. In terms of value, this is a medium intensity correlation. But considering the heterogeneity in the production process and products between the companies, it is a fairly tangible correlation (see graph: *Gliding in tandem*).

However, if we consider two-wheeler and four-wheeler segments separately, where the companies are more than 10 years old and are making similar type of products, the coefficient of correlation is 0.81 and 0.76 respectively. Therefore, there is a fairly tangible correlation between the environmental performance and economic performance of companies. It is important to note that new companies were not considered because most of them are yet to stabilise and make substantial profits.

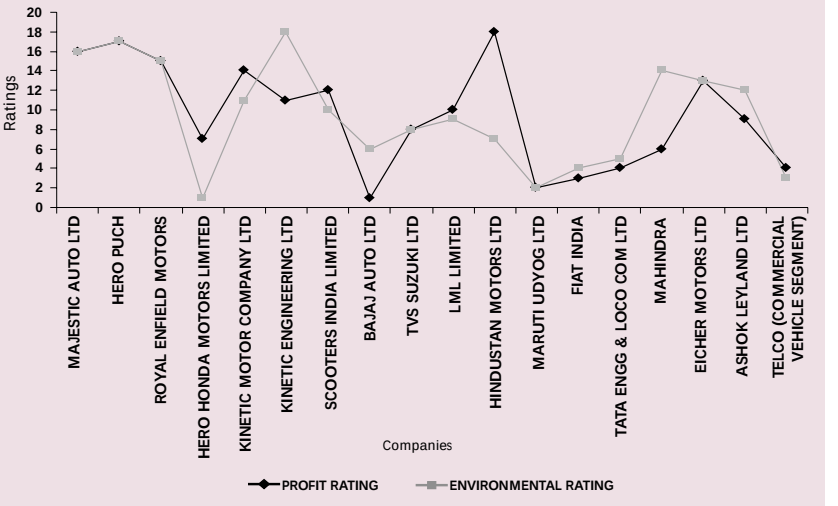
Moreover, the link can explain that being environment-friendly also helps companies tide over the slump that is beginning to set in the automobile sector. Maruti Udyog Ltd and Hero Honda Motors India Ltd will continue to make profits, albeit less, despite the recession, while the environmentally-poor companies will have to call it a day.

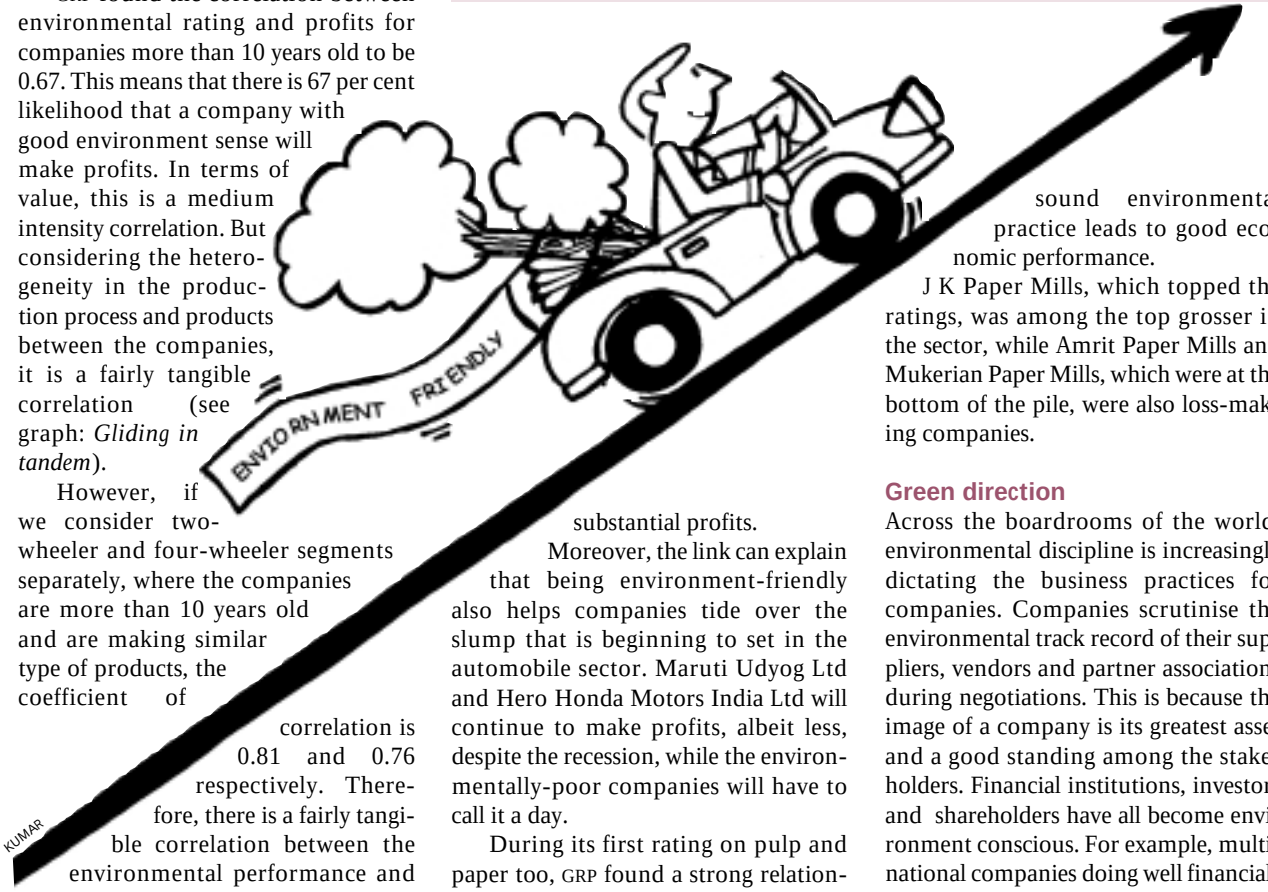
During its first rating on pulp and paper too, GRP found a strong relationship between economics and environment. The project found a strong statistical support in the performance of various segments to reinforce the fact that sound environmental practice leads to good economic performance.

J K Paper Mills, which topped the ratings, was among the top grosser in the sector, while Amrit Paper Mills and Mukerian Paper Mills, which were at the bottom of the pile, were also loss-making companies.

Gliding in tandem

Investing in the environment rakes in the moolah





Green direction

Across the boardrooms of the world, environmental discipline is increasingly dictating the business practices for companies. Companies scrutinise the environmental track record of their suppliers, vendors and partner associations during negotiations. This is because the image of a company is its greatest asset and a good standing among the stakeholders. Financial institutions, investors and shareholders have all become environment conscious. For example, multinational companies doing well financially are also those that are investing in environmentally sound practices. Unfortunately, this trend is yet to take roots in India. ■


KUMAR

Winning by default

Automakers score high on compliance. Only because the regulations are too lax

WHENEVER a company is asked about its environment performance, it flashes its compliance record. True, compliance at the production plant has never been a problem for the Indian automobile sector — it has scored 68 per cent marks in the compliance status. But its good performance has got to do with bad laws. Lax regulations make it easy for companies to meet minimum environment targets. This is mainly because the regulations are not in tune with the kind and amount of wastes that are generated at the production plants of the automobile companies. In many cases irrational.

For example, the biological oxygen demand (BOD) limit for the pulp and paper industry — which produces large quantities of highly biologically polluted wastewater — and the automobile industry is the same, though automobile industry produces very little biological pollution. The result is that every company is comfortable meeting the 30 milligramme per litre (mg/l) limit without doing anything. As many as 13 companies (50 per cent) had no problems with compliance in last three years and have scored 100 per cent marks.

The kind of waste generated by the automobile sector is not biological, but chemical in nature. What most companies do is mix this water with the wastewater generated from civil use. The problem is with the segregation of waste, and most companies don't do it. As a result, most units end up with either more biologically polluted wastewater or more chemically polluted water. When GRP confronted the companies with the issue, they pointed fingers at the prescriptive schedule of the state pollution control board for the lack of segregation.

The project's analysis indicates that of the five wastewater parameters, four can be met without any treatment. The only parameter for which treatment is required is BOD and that too is not contributed by the production process but by the civil consumption. In other words, of the five major wastewater parameters — BOD, chemical oxygen demand (COD), oil and grease, chromium and nickel — automobile sector can meet all parameters, except BOD, without any treatment facility.

Moreover, Indian automobile companies are just happy to meet the regulatory standard for air emissions. They have not shown any interest to move beyond the prescribed norms. This is the reason for their average score of 30 per cent obtained by the sector in air emission. For example, most companies do not monitor the volatile organic compounds (VOC) emanating from their paint section because this is not a regulatory requirement.

As many as 25 per cent of the companies have admitted that they do not have a proactive approach and would rather follow government regulations rather than set new standards. Currently, Indian vehicles are meeting Euro II equivalent norms in the National Capital Region of Delhi and other metros and Euro I equivalent norms in the rest of the country. Meeting the norms is the bare minimum requirement and every company has to meet the norms legally. The big question is how good the vehicles are when we consider regulatory norms as the base line. To find out, GRP compared the average emissions of vehicles with their respective regulatory norms for all automotive segments, to find the deviation of the emissions from the norms. The findings were significant.

Every segment was meeting more than what the standards prescribed. In the mass-transport vehicle segment, tail-pipe emissions were as much as 66.2 per cent better than the applicable regulatory norms. For example, particulate emissions from the two CNG-fuelled mass transport vehicles are as much as 73 per cent better than the regulatory norms. Petrol passenger cars segment comes next with 59.07 per cent followed by four-stroke two-wheelers with 53.14 per cent and two-stroke two wheelers with 40.80 per cent.

The emissions from diesel passenger cars and multiutility vehicles are just 22 per cent better than the applicable regulatory norms. This is also the minimum deviation that any automobile segment has from the applicable norms.

The writing is on the wall for the Union government: make the norms stringent to arrest the worsening air pollution. ■

Strange bedfellows

Lenient laws lend a helping hand to automakers. Vehicle emissions are lower than the norm

Automobile segments	Average percentage deviation from standards
Passenger cars (petrol)	59.07
Passenger cars and MUVs (diesel)	22.85
Two-stroke two-wheelers	40.80
Four-stroke two-wheelers	53.14

NOTE: The emission parameters considered for this analysis are the following for various segments:
Mass transport vehicles: CO, HC, NO_x and PM
Petrol passenger car: CO and HC + NO_x
Diesel passenger car and MUVs: CO, HC+NO_x and PM
Two-wheelers: CO and HC + NO_x

TIME TO INTROSPECT

Policymakers must put public health above everything else to chart the future. Consumers must demand change so that industry can be forced to fall in line

TAKE a look around, if the roadside sign "stop pollution" is too hazy to read, it's because the government, indusry and the public are to blame. The government will not tax the polluting vehicles, the industry won't innovate and the public will not ask for its right to clean air.

For the government

The government needs to stop subsidising polluting fuels like diesel. The poor do not benefit from subsidies. The rich do. The increasing number of diesel versions of car models hitting the market gives credence to this argument. So price fuels as per the cost. Instead, the government must give incentives for those who want to go for cleaner fuels like compressed natural gas (CNG). It must pursue a policy that penalises pollutants — say by imposing heavy taxes on a polluting vehicle. This will automatically make that vehicle a prohibitive option.

For multinationals wanting to indigenise, the government must set broader guidelines on indigenisation to make sure that the transfer of pollution, which is today shifting to the small-scale sector, does not take place. Pollution control boards must set up monitoring systems to check solid waste generated at the production plants and also formulate regulations for incinerators used in the plants. They must also monitor dangerous chemicals like dioxins, furans and must ban the cancer-causing Trichloro-ethane. Supply chain management must also become a part of the pollution regulations. The government also needs to check the pollution downstream — service stations and work shops — that have hitherto gone unchecked.

Multiutility vehicles are being used as passenger cars in cities. Therefore, they must be brought under the gambit of commercial vehicles as far as meeting emission norms are concerned. The government must also scrap old vehicles by giving incentives to consumers as well as for industry. The industry must also be made responsible for their product disposal. Most importantly, the government must make the emission norms stringent. Presently, the norms are too lax and automakers are actually getting away with slow murder.

For the industry

Less than 50 per cent of the automobile companies have an environment policy. Even those who have it, less than 50 per cent have addressed the environmental aspects of their product in their policy. This must change.

The real pollution of a vehicle takes place during product use and disposal. This must be brought under the environmental management system (EMS) certification. Also, ISO 14001 certification does not take into account the polluting process the companies have coolly shifted to the small-scale sector.

A process to green the supply chain must be undertaken. The industry must also monitor the performance of its vendors. An environmental audit that takes into account both quantitative as well as qualitative aspects must be undertaken.

Multinational companies must stop dumping obsolete technology into India. Above all, companies need to invest in research and development (R&D) to improve fuel efficiency and engine technology. Multinational companies should invest in R&D in India, instead of relying on their parent companies.

For the consumer

Consumers must use GRP product ratings to make buying decisions. Vehicles pollute not with the manufacturer, but when it changes hands to the buyer. Therefore, maintenance must be the consumer's priority. For that, consumers must demand information on emissions, fuel efficiency, pollution control equipments and emission warranty.

Last word

GRP is an exercise to sensitise the environmental aspects of the automobile industry. Change must begin at the top. Sadly, the Union government's ways have been such that it is seen to protect the interests of the industry, not the people. Being a seller's market, consumers in India have accepted their fate. With a friendly government and an indifferent consumer, the industry is making a killing.

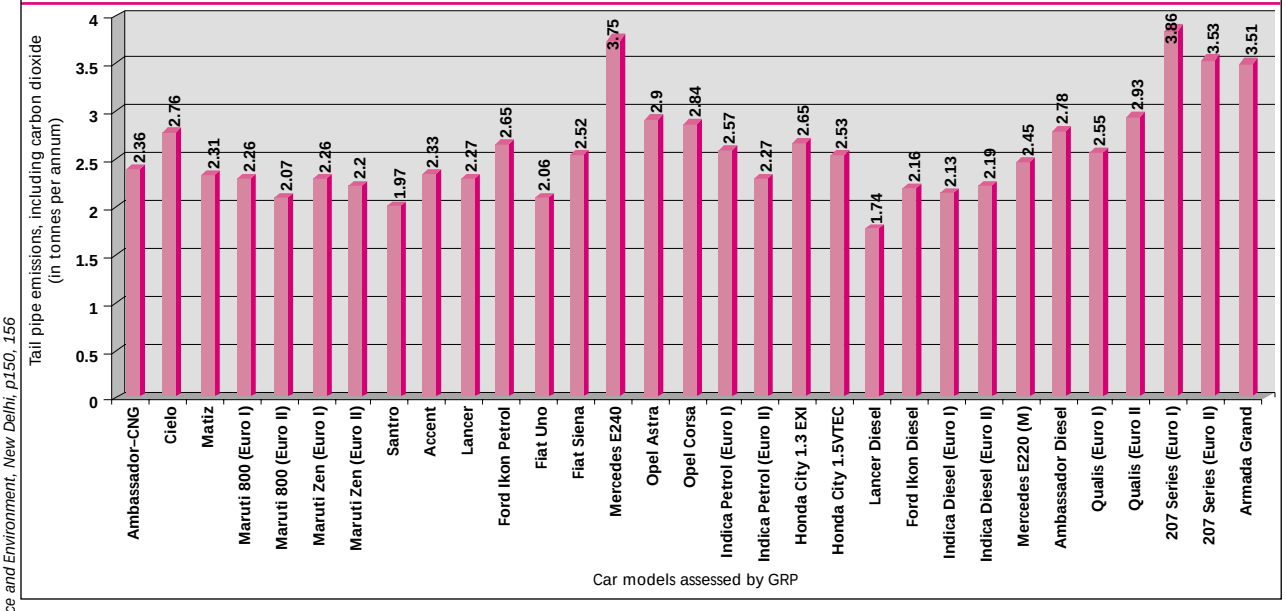
In many ways the issue is also about a complacent mindset. At the release function, CSIR director-general R A Mashelkar had an interesting anecdote to narrate. Relaxing on a lazy afternoon beside a swimming pool in Indonesia, he saw a few children playing. When a dried leaf fell into the water, a child went out of his way to catch it. Instead of throwing the leaf outside the pool, the child went to the dustbin a few yards away. Just to make sure that the pool and its environment was kept clean. Now can we say that about Indians? ■

Heavy load

The auto industry releases a new model of vehicle every now and then. What is not new about them is that they all pollute. The emissions that these cars and two-wheelers spew out are a serious threat to public health. And the high emission is avoidable. The Green Rating Project's environmental rating of the automobile sector is meant to spur the industry in the right direction — forcing the auto companies to invest in cleaner technologies. If they do not, people will continue to choke on the increasing pollution load.

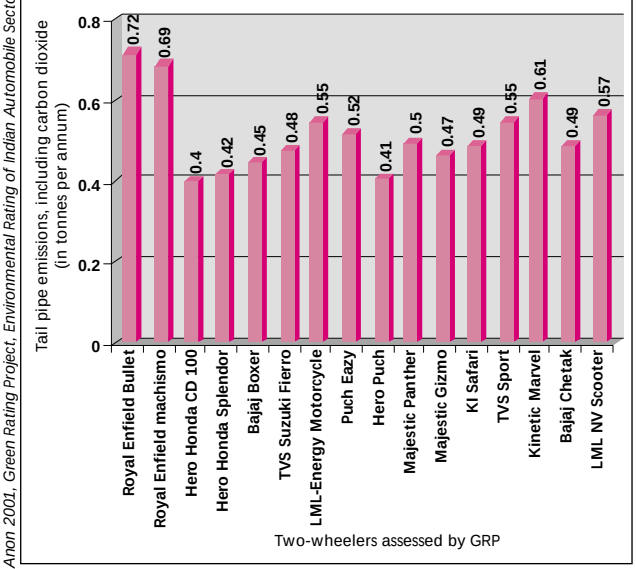
Pollution load from cars

Nearly every model assessed by GRP would spew more than two tonnes of pollution load annually



Riding through smoke

There continues to be a large scope for the two-wheeler segment to reduce the emission levels



Delhi's death

Delhi is being increasingly smoked to death by emissions from vehicles

Source: Anon 2001, Green Rating Project, Environmental Rating of Indian Automobile Sector, Centre for Science and Environment, New Delhi, p150, 156

NOTE: **1.** Annual emissions represents the total annual tail-pipe emissions including CO_2 from a vehicle assuming a daily trip length of 40 kilometres.
2. Estimation based on fuel efficiency. **3.** The number of cars and two-wheelers in Delhi for the year 2000 have been projected.
4. The average annual pollution load of cars and automobiles have been calculated by manipulation and calculations from the GRP's data

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