

Message from the Editor

October has been designated Transport Month. The month is filled with launches of public transport upgrades, new transport initiatives and once again, the piloting of the HOV lane on key stretches of freeway in Johannesburg. The HOV lane has again become a controversial initiative, with complaints about delays and increased congestion. It would be interesting to see what the results of this pilot would be, if it was extended to longer than a week.

The focus of this edition of the e-Tran:SIT is on private vehicles and technological developments towards more environmental friendly vehicles. No alternative available today is without controversy, but the change does need to start somewhere. We'll be discussing some of the alternatives here.

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Can't afford a hybrid, what other options are available in South Africa

The motor vehicle industry is experiencing increased pressure to make environmental performance a priority in the manufacture and design of their vehicles. The recent Frankfurt Motor Show revealed an increase in the number of "green cars" using hybrid, electric and fuel-cell technologies. Most of these are still in prototype phase, which means that we will have to wait before much of this technology becomes commercially available. The availability of green vehicles in South Africa is currently extremely limited and generally not affordable to the average consumer. For the time being the best option is to look at fuel consumption and CO₂ emissions in order to decide on the most environmentally friendly option.

We have developed a list of the top cars in terms of the above criteria in four vehicle categories, namely mini-cars, hatchbacks, sedans and 4x4/SUVs. We'll be highlighting the top performers for each category here. For the full set of tables, please visit the Tran:SIT website (www.sustainable.org.za/transit).

In the mini-car category, the top performers are the Citroën C1 and the Peugeot 107, followed by the SmartCar. In the hatchback category, the top performers include the Toyota Yaris 1.3 and the Citroën C2 1.4. The VW Jetta 2.0 and Ford Focus 2.0 are the top performers in the sedan category. Finally, the BMW X5 and the Hyundai Tucson 2X4 have the best figures in the SUV/4x4 category.

The models given in the table are petrol models. Although diesel models usually have lower carbon emission, there are a number of other pollutants emitted by diesel vehicles, including particulate matter, which can have harmful impacts on human health. Another consideration when deciding whether to go for the petrol or diesel model is to look at the fuel consumption. If the difference between the two is less than 10%, then it is generally better to go for the petrol model.

Hybrid Electric Vehicles – the current front-runner in green cars?

The electric hybrid vehicle is probably the most well-known alternative vehicle, thanks in part to the Toyota Prius, which is currently the only hybrid electric vehicle available in South Africa. A hybrid electric vehicle combines a conventional internal combustion engine with an electric motor powered by batteries. Some of the technological advances found in a hybrid electric vehicle include an automatic engine shut-off when the vehicle comes to a stop. The vehicle will restart when the accelerator is pressed. This prevents waste energy from idling. Most hybrid electric vehicles make use of regenerative braking. During braking the wheels will function as a generator, as the energy from the wheels slowing down will turn the motor. The energy normally wasted during coasting and braking is converted into electricity. This electricity is stored in a battery until it is needed by the electric motor.

An electric hybrid vehicle typically has better fuel consumption as well as less emissions per kilometre travelled. It is generally quieter than conventional engines particularly at lower speeds. The number of hybrid vehicles available is increasing each year. Nissan and Honda also have hybrid options, although these are not yet available in South Africa.

Electric Vehicles - Technology Updated

Some of the first vehicles were powered by electric motors, but advances in internal combustion engines provided too much competition to the limited-range electric vehicles of the time. Interest in electric vehicles has increased due to the need to reduce air pollution and the major advances in battery and motor technology. Recently, Tesla Motors announced their range-testing results for the Tesla Roadster, a full electric vehicle. The average range came in at 394 km to a single charge, which is much further than originally thought. Technology is improving quickly and the range of electric vehicles is sure to increase.

Electric vehicles produce zero emissions, generally have lower fuel and operating costs and are able to reuse recycled energy from regenerative braking. Although electric vehicles will mean less dependence on imported oil for petroleum, concerns about available and constant energy supply are not unfounded. Other challenges include the infrastructure requirements for public recharging as well as the need to improve battery technology, while ensuring that the vehicles are affordable for the consumer.

Hydrogen Fuel Cells – The solution to the problem?

Another alternative fuel technology receiving a lot of interest, particularly in the United States and Europe, is hydrogen fuel-cell vehicles, which are propelled by electric motors, but create their own electricity. Fuel cells on board the vehicle create electricity through a chemical process using hydrogen fuel and oxygen from the air. Most of the main motor manufacturers, including BMW, Ford Motors, Honda, Toyota and Volkswagen are all investigating fuel cell technology for passenger vehicles as a means of moving away from a dependence on fossil fuels. There has also been major development around fuel cell buses, which are used in the urban centres of some European cities.

Fuel cells have similar advantages to other alternative technologies, including zero emissions, in this case only water and heat, quieter and more fuel efficient vehicles. Although many see hydrogen fuel-cells as the solution for green cars, there are a number of challenges that need to be taken into consideration. These challenges include difficulty in storing enough hydrogen onboard to travel as far as conventional vehicles, problems in getting hydrogen and associated infrastructure to the consumers as well as some safety concerns around the new technology. The technology is currently still too expensive for consumers to afford.

Practical Tip

The most fuel-efficient speed is between 75 and 90km/h. Driving at speeds more or less than this can result in fewer km travelled for the same amount of fuel burned. Driving at 120km/h consumes up to 20% more fuel than driving at 90km/h. Driving at higher speeds will get you to your destination more quickly, but the cost will be a lot higher.

Editor's Choice

The Intergovernmental Panel on Climate Change (IPCC) recently released its fourth assessment report. Working Group III looked at the scientific, technical, environmental, economic and social impacts of mitigating climate change. Chapter 5 of this report looks at transport and its infrastructure and the sector's impact on climate change. It also discusses some mitigation options available. Visit www.mnp.nl/ipcc/pages_media/AR4-chapters.html

Forthcoming Events

October is Transport Month in South Africa. Other than the HOV lane pilot project taking place in Johannesburg, there are a number of events taking place in the next two weeks, focusing on public transport, road safety and non-motorised transport. Visit the Department of Transport website at www.dot.gov.za/transport_month/index.html for more information.

Sustainable Energy Africa (SEA)

Sustainable Energy Africa promotes sustainable energy approaches and practices through research, capacity building, information dissemination, project implementation, lobbying and networking. SEA manages the Urban TRAN:SIT Programme, which aims to build capacity in local government to develop more sustainable transport policy, strategy and implementation in South African cities.

If you would like to contribute to this newsletter or if you have any comments or questions, please contact us at lize@sustainable.org.za or call 021 702 3622 and ask for Lize Jennings.

