



Shell Eco-marathon 2009

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Chief Executive, Royal Dutch Shell plc

Eco-Marathon, Lausitz,
Germany,
7 May 2009



Jeroen van der Veer is Chief Executive of Royal Dutch Shell plc. He joined Shell in 1971 and worked in manufacturing and marketing in the Netherlands, Curaçao and the United Kingdom. In 1992, he became a Managing Director of Shell Nederland. Three years later he became President and Chief Executive of the Shell Chemical Company in the United States. He was appointed a Group Managing Director in 1997.

Jeroen was born in the Netherlands, and is married with three daughters. He has two degrees - one in mechanical engineering from Delft University and another in economics from Rotterdam University. He is a Non-executive Director of Unilever.

In this speech to the participants in the 25th edition of the Shell Eco-Marathon Europe, Jeroen van der Veer discusses the need for sustainable mobility. By 2050, more than a billion extra vehicles are expected to be on the road, which is more than double the total today. So there will be room and need for diverse energy sources for transportation. Shell will contribute to building a sustainable transport sector along two tracks. The first is to reduce the CO₂-intensity of liquid fuels, through fuel-saving conventional fuels, sustainable biofuels and, in the longer term, by adding CO₂ Capture and Storage to gas and oil production. The second track constitutes our involvement in generating low-emission electricity for sustainable electric mobility. The bulk of our efforts in this area will go to increasing the use of natural gas in power and the deployment of CO₂ Capture and Storage technology.

Future of mobility

Welcome to the ECO-Marathon, the 25th edition of what has become a world-famous event.

This landmark year demonstrates that Shell has a long history of thinking about the future of mobility. Over the past 25 years, students participating in the Eco-marathon have set ever-sharper records, driving longer distances, using less fuel.

I hope this year we will see old records broken – and the Eco-marathon will again inspire people to look at the future of mobility with confidence. As I look to the future, I'm confident that people will be able to continue travelling - and we will manage to make mobility more sustainable.

And when future historians look back, they will see that Shell's Eco-Marathon made a small, but meaningful contribution to this transition.

Sustainable transport

Clearly, the current status quo in the global transport sector is not sustainable.

We must increase energy-efficiency, and bring down CO₂-emissions from transport.

And not only that, transport must remain affordable for ordinary people, and convenient in its use.

And, of course, we need the energy supplies for mobility to be actually available. There is little point in buying a hydrogen car if there is no hydrogen supply available to power it.

So: sustainable transport for the future is based on the following premises:

- there is enough energy to go around - supplies are actually available,
- it's clean: so it has a low CO₂ footprint and high energy-efficiency,
- it's affordable,
- and it's convenient to use: this means that it is easy to fill up your tank or recharge your battery and you can do it quickly.

Transformation takes time

Building a truly sustainable transport sector will take decades, change will be gradual, and conventional liquid fuels will likely remain dominant until at least 2050.

But by 2050 more than a billion extra vehicles are expected to be on the road. That's more than double the total today.

This means there will be room and need for diverse energy sources for transportation.

So there will be a growing role for biofuels, electricity, hydrogen and natural gas.

The variety of fuels used by the ECO-Marathon contestants shows they're at the cutting edge of the diversification in transport fuels. Let me say a few words about conventional liquid fuels, biofuels, and electric mobility.

First, on conventional liquid fuels: Gasoline and diesel will remain dominant fuels through to 2050.

But there will be two important changes: A shift from developed to developing markets,

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and a considerable growth of new transport fuels. As a result, there will be more competition, resulting in better fuels. Until 2025, substantial efficiency and CO₂ gains can be made in Internal Combustion Engine technology, vehicle weight and fuel performance.

For example, already the European vehicle fleet 40% is more efficient than the US vehicle fleet – which saves Europe around 3,5 million barrels of oil imports per day – equivalent to the combined oil consumption of France and UK.

And in the longer term, we can further reduce CO₂ emissions from liquid fuels by adding CO₂ capture and storage to the production of oil and gas.

If we then look at Biofuels, the first thing to notice is that biofuels and hydrocarbon liquids are natural partners. Biofuels can accommodate long journeys and be distributed as easily as gasoline and diesel through the same distribution networks and infrastructure.

Biofuels will be sold as blend with gasoline and diesel. Or in pure form – which requires flex-fuel vehicles, like in Brazil.

But will biofuels contribute to a more sustainable future? Only if there is effective biofuels regulation that promotes those with a good CO₂ footprint. After all, not all biofuels are created equal: Corn-ethanol produced in the United States currently has little or no CO₂ benefit. Companies like Shell nevertheless buy and distribute corn-based ethanol in order to satisfy U.S. government mandates.

By contrast, ethanol from sugarcane in Brazil, for example, delivers at least an 80% reduction in CO₂ emissions.

And, longer term, we are working on a portfolio of biofuels with even better CO₂ footprints.

Electricity and hydrogen

Electric mobility, of course, is the talk of the town today.

We believe that the number of plug-in hybrids, full-electric vehicles and hydrogen/

fuel cell vehicles is set to grow in the coming decades.

And Shell is quite relaxed about that. I can imagine a future in which Shell stations offer to service and replace batteries alongside petrol. And, as I will explain in a minute, Shell will play a role in generating the low-emission electricity that is needed for truly sustainable electric mobility.

But some technical hurdles must be overcome before large-scale electric mobility becomes a reality.

- The journey range of batteries needs to go up.
- Solutions will have to be found for convenient recharging or replacing of batteries. But the most serious issue concerns the electricity itself.

Wind and solar by themselves will make growing contributions to power generation, but by themselves they will not be sufficient to power large-scale electric mobility.

If electric mobility depends on burning coal in power stations, and if nothing is done about CO₂ emissions, then electric mobility will not bring as many environmental benefits as people hope.

So we will have to do something about these CO₂ emissions. The best way would be to capture the CO₂ and store it permanently underground, in depleted oil and gas fields or saline aquifers. With our expertise in geology, drilling, gas handling, and gas-reinjection, the oil&gas industry is well-placed to play a leading role here.

For Hydrogen fuel cell cars it's a similar story: a lot depends on how the hydrogen is generated and what is done with the CO₂ emissions.

Hydrogen fuel cell cars can co-exist with battery-driven electric cars. And fuel cell vehicles can be refueled just as quickly as today's cars.

So what does all this tell us? First of all, that different energy sources will power a growing vehicle fleet. Secondly, that in designing and implementing regulations and standards to reduce CO₂ emissions, governments should

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focus on reducing overall CO₂-intensity - “from well-to-wheel”. That’s a better approach than it would be to promote one particular energy-source and discourage or displace others.

Shell’s contribution

And where does this leave Shell?

Well, in the coming years, we will help reduce the CO₂ intensity of the world’s mobility sector along two tracks:

- Reducing the CO₂-intensity of liquid fuels, through fuel-saving conventional fuels, sustainable biofuels and, in the longer term, by adding CCS to gas and oil production.
- And the second track constitutes our involvement in generating low-emission electricity. The bulk of our efforts in this area will go to increasing the use of natural gas in power, and CO₂ Capture and Storage.

Shell is the world’s largest distributor of liquid transport fuels, including biofuels.

As such we will continue to develop and roll out energy-efficient liquid transport fuels and lubricants that help drivers improve their fuel efficiency. And we will continue with programmes that train people to use energy-efficient driving techniques, similar to the ones Eco-Marathon participants have honed to a fine art.

We also have six demonstration fuel stations for hydrogen fuel-cell vehicles in Asia, Europe and North America. But hydrogen remains a long-term play.

Biofuels

For the coming years, perhaps the most exciting new area for us is biofuels. We are stepping up our efforts to grow biofuels into a commercial-size renewables business.

We expect to grow our spending in 2009 and 2010 in biofuels and biofuels technologies. We are exploring several different pathways for the short term and the long term. Some will work, others won’t. And we will only commercialise the best biofuels technologies – so those that

have a good CO₂ footprint *and* can compete on price.

Biofuels are a welcome addition to the world’s energy supply. We believe that biofuels could grow from just 1% of the world’s transport fuel mix today to as much as 7–10% over the next few decades.

In biofuels Shell has technology to add: We have a leading portfolio of next generation biofuels. This portfolio consists of research positions in conversion technologies and also small-scale projects in bio fuel production from new, non-food feedstock - with attractive life cycle CO₂ profiles.

Sustainable biofuels could make a substantial contribution to reducing CO₂ emissions.

Let me assure you that we take very seriously our responsibility to build sustainable biofuel supply chains. If sellers want to supply Shell, they *must* commit to working with us to develop a more sustainable supply chain. We will track their performance against the social and environmental safeguards we’re writing into their contracts. We also work together with NGOs, policy makers and industry coalitions, to develop robust global standards for sustainable biofuels production.

Low-emission electricity / CCS

Shell can also play a role in delivering low-emission electricity.

We are one of the world’s top-20 players in wind power.

We have excellent thin-film solar technology, and our company in Japan, Showa Shell is a player in solar too.

But the real challenge is to find ways to reduce the CO₂ impact of coal. There are two pathways for making that happen.

The first is to displace some of the coal by natural gas, the cleanest-burning fossil fuel. And at Shell that’s what we’re trying to do. You may think of us as an oil company, but we’re also very much a gas company. In 2008, 45% of our production was natural gas. And by 2012 that share will likely have risen to more than 50%.

We will only commercialise the best biofuels technologies – so those that have a good CO₂ footprint and can compete on price.

The other way is to reduce the environmental burden of coal itself. In other words: CO₂ Capture and Storage is key. For the oil & gas industry, CCS is an opportunity. We've been injecting CO₂ in oil fields for decades to boost production. So we think we have the knowledge and expertise to sequester CO₂ safely and responsibly.

Shell is involved in a number of potential CCS projects in Canada, Europe and Australia. In Germany, we're taking part in CO₂ SINK, a public-private research project that began injecting CO₂ in a saline aquifer in June 2008.

Conclusion

To wrap up, at Shell we think alternative and renewable energy have a great future. We know the world will need them to meet rising demand for sustainable mobility.

We have been exploring renewable energy for years, with many pots on the fire. And our ambition remains to build at least one substantial renewable business.

At the moment we think biofuels and CCS have the best fit with our core business and a strong potential to limit CO₂ emissions in the future.

Other companies will choose different approaches, which we welcome.

As you'll see first hand over the next few days, competition brings out the best in human energy and ingenuity. In the running of the 25th Eco-marathon, as in the race to find new forms of sustainable energy for transportation, may the best team and the best technology win!

Thank you.

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