

# The government pushes what it hopes will be the clean fuel of the future

“THE dawn of a true hydrogen society” was how Shinzo Abe, Japan’s prime minister, last month described the opening of Tokyo’s first hydrogen fuelling station. Mr Abe himself was the first to take delivery of a new fuel-cell car manufactured by Toyota, a Japanese carmaker, when it went on sale in December. It is the world’s first commercial hydrogen car, which Toyota has named “Mirai”: “the future”.

Mr Abe is serious in his endeavour to “rev up the hydrogen revolution”. His government is paying generous subsidies of about ¥3m (\$25,000) per fuel-cell vehicle (each currently costs around ¥7m) to residents of Tokyo; the city has pledged a total of ¥45 billion for hydrogen-related infrastructure ahead of the Tokyo Olympics in 2020. Billions more in public money has been set aside to build filling stations around the country over the next year.

The new Mirai models are part of a broader effort to commercialise hydrogen fuel-cell technology in a country that has taken all of its nuclear power plants offline and that imports most of its fossil fuels. Japan plans to install small hydrogen fuel-cell units in over 5m homes by 2030. The government hopes that hydrogen cars could be the next hit for Japan Inc, which has lost ground globally in computers and electronics. Unlike electric cars, which have a limited driving range and take hours to recharge, hydrogen vehicles run for up to 650 kilometres on a full tank and take just a few minutes to fill up. Their exhausts emit nothing but water vapour.

In the green-car stakes, Toyota has a successful record with the Prius. It is the most popular hybrid vehicle worldwide, with 3m units sold since the model entered showrooms in 1997. But whereas electric cars can be plugged into the existing grid, Toyota will need to invest heavily in filling stations along Japan’s major motorways and roads for the hydrogen sort. Toyota Tsusho, the group’s trading arm, has already called in Air Liquide, a French company that supplies industrial gases. The two companies have announced plans to build 100 hydrogen stations in total along the main thoroughfares of Tokyo, Fukuoka, Nagoya and Osaka, by the end of this year.

Not everyone is convinced. Chief among the doubters is Carlos Ghosn, the boss of Nissan, a rival Japanese automaker that has yet to make a fuel-cell car. Who, Mr Ghosn asks, will build the vital infrastructure that will encourage consumers to buy? Others question the efficiency of the system, which requires production, transportation and condensation of hydrogen gas in a process that is costly and energy-intensive (hydrogen needs to be stripped from a mix of other compounds, such as water and hydrocarbons).

By January, just 1,500 orders had been placed for the Mirai, and about half of those came from government offices. If the market expands, prices should naturally fall and could in turn lead to less expensive options around refuelling. Toyota Tsusho hopes eventually to halve the cost of installing hydrogen stations to around \$2m each. Still, the cars are particularly tricky to build. Toyota expects to produce only 700 this year; customers ordering now may need to wait three years before they receive the keys.

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*Answer the following questions in correct Dutch.*

1. Op wat voor brandstof moet de Mirai van Toyota gaan rijden?
2. Waaruit bestaat de uitstoot van deze auto?
3. Welke voordelen van de Mirai worden genoemd ten opzichte van bestaande auto's?
4. Op welke exportproducten heeft Japan wereldwijd terrein verloren?
5. Waarin moet Toyota flink investeren om deze auto in Japan succesvol te laten worden?
6. Wat is volgens sommigen het probleem met de efficiency van het systeem?
7. Hoeveel bedragen op dit moment de kosten van het installeren van één tankstation voor dit type auto?

## Antwoorden

1. Waterstof
2. Waterdamp
3. Schone uitlaatgassen (waterdamp) en een groter bereik op één tank