Researchers say hydrogen powered cars would need 100,000 wind turbines or 100 nuclear plants

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Researchers from the University of Warwick have produced a startling calculation that any move to replace the UK's oil burning vehicles with greener hydrogen powered cars and trucks **would require the erection of 100,000 new wind turbines or 100 new nuclear power plants**.

University of Warwick Economist Professor Andrew Oswald and energy consultant Jim Oswald have laid out their calculation in an article entitled "The Arithmetic of Renewable Energy" to be published in the next edition of Accountancy magazine.

"The enormity of the green challenge is not understood" said Jim Oswald. "Many people think that hydrogen is a simple alternative to oil, but in fact it will require a huge investment in either wind farms or nuclear plants."

The researchers say that there are many good reasons to consider switching our vehicles from oil to hydrogen – particularly the concerns raised about oil consumption's contribution to global warming, the fact that much of our oil lies buried in politically unstable countries, and the fact that at some point in the future oil supplies will start to run dry. Transport consumes approximately 55 million metric tonnes of oil per year and the rise of the car in our society has seen energy use on the roads almost double since 1970.

The researchers argue that the only practical green alternative way to run motor vehicles is to power them with hydrogen.

But what the researchers point out is not widely appreciated is that hydrogen is not a source of energy - it is a carrier of energy – and the hydrogen has to be made, transported and stored using huge amounts of renewables-based electricity. In their paper the University of Warwick researchers have calculated what the power costs would be to run all of Britain's road transport, in a truly green way, with hydrogen.

Their answer is disturbing. They found that it would require approximately 100,000 new wind turbines. If sited off-shore, this would mean an approximately 10-kilometre-deep strip of wind turbines encircling the entire coastline of the British Isles. If sited on-shore, the area covered by wind turbines would be the size of Wales.

They then looked at the alternative of using nuclear power. Although that leads to other long run concerns (particularly how to deal with radioactive waste), nuclear power stations could in principle provide the necessary green electricity to produce the hydrogen to fuel our transport needs. However again the researchers found the number required is striking. Their calculations conclude that 100 nuclear power stations would be needed to fulfill this role.

Source: University of Warwick