

26. Choice of fuel cells or batteries

There are two main competing technologies for zero emission vehicles. The key metric is the energy storage per kilogram of weight carried. Electric vehicles store electric charge in a battery and can be recharged from the electric grid. They do not produce emissions at the point of use. Fuel cell vehicles use hydrogen as the fuel, and react it with oxygen to liberate energy used to power the car. Ideally, the only emission they produce is water vapor. The advantage of hydrogen is that vehicles can travel further before refueling. The hydrogen is produced by electrolysis of water, again using the electric grid. This additional step introduces losses, but in reality it could take advantage of spare grid capacity to use electricity that would otherwise be wasted.

The last decade

Electric cars have started to gain a market foothold around the world. In Bangladesh, some rickshaws have been converted to electricity. The limited network of charging stations has slowed the commercial growth of both types of technology. Home electricity can be used to charge a car overnight.

Assumptions of model

The model assumes both technologies are equally viable for Bangladesh, and that a mix of technologies does not impose significant additional infrastructure burdens.

Levels

Level 1

100% of zero emission vehicles are Electric.

Level 2

80% of zero emission vehicles are Electric, 20% are Fuel Cell.

Level 3

20% of zero emission vehicles are Electric, 80% are Fuel Cell.

Level 4

100% of zero emission vehicles are Fuel Cell

Interaction with other levers

This lever acts only on zero-emission vehicles. The number of these is controlled by the "Switch to zero emission vehicles" lever.



Figure 26.1: A fuel cell bus, London



Figure 26.2: An electric car charging, Amsterdam