A new 'Copenhagen Wheel' bicycle that captures energy from pedalling to power a cyclist uphill is being hailed as one of the world's best new inventions.

The cycle is fitted with a hub containing a small motor that charges up by the bike's movement and braking.

A rider's smartphone docked on the handlebars controls the 'engine' and connects to the hub of the wheel using Bluetooth, which can also lock the bike.

The machine doesn't need any sensors or additional electronics and the whole system can be installed on a regular bicycle.

"When you brake, your kinetic energy is recuperated by an electric motor and then stored by batteries within the wheel, so that you can have it back to you when you need it," Sky News quoted Massachusetts Institute of Technology developer Carlo Ratti, who won the James Dyson Award for the best inventions of 2010, as saying.

"The bike wheel contains all you need so that no sensors or additional electronics need to be added to the frame and an existing bike can be retrofitted with the blink of an eye," he added.

The phone can change gears and the gadget can map pollution levels, traffic and road conditions. (ANI)