

THE COPENHAGEN WHEEL AN INNOVATION FOR SMART CITIES

By Kim Assaël

The latest news on bicycles is the [Copenhagen Wheel](#). The ancient invention of the wheel becomes an instrument for smart cities, the bike becomes a means of transportation for everyone and local governments adopt it as an innovation to promote sustainable mobility.



In the current global movement, that for the first time sees the number of bikes exceed that of cars and China, Europe and America competing for the invention of the smartest transport, the Copenhagen Wheel is positioned in an interesting way on the market. It was born from a request of the mayor of Copenhagen to the *Senseable City Lab* team directed by the engineer Carlo Ratti, at the Massachusetts Institute of Technology, where the first prototype of the new smart wheel was created. The Ducati Company also participated in the project as technical partner.



The Copenhagen Wheel was unveiled on December 2009 at the COP15 United Nations Climate Conference and the use of this new bike has been successfully tested and launched in 2011 in Copenhagen.

The invention consists in an integrated and flexible mechanism inserted into the rear wheel, turning a normal bicycle in a pedal assisted cycle, with no need for electrical recharging. Motor, batteries and sensors enclosed in the wheel let not disperse the spare kinetic energy not used (downhill or braking) to return it at the appropriate time, on the climbs or where more speed is needed. This mechanism can be installed on any bike.



Thanks to this innovation the bike is no longer reserved only for young people, sportsmen or cyclists, but it can be a means of transportation for all citizens interested in contributing to the urban sustainability of the city. Just changing the rear wheel of the bike this transport may be used by people of different ages and ways of life and also in cities with uphill roads.

The Copenhagen Wheel also contains several internal sensors for pollution monitoring in real time, a Bluetooth alarm system and a GPS system for localization. These devices, along with servers located in the bike rack allow public authorities to collect data for urban pollution analysis.

In 2012 also the Ministry of the Environment in Italy has promoted its use by providing 1.000 bikes to local governments interested in experiencing the zero emission mobility and helping reducing pollution. The National Association of Italian Municipalities ANCI takes part in these initiatives with a program that provides for the



distribution to 42 city governments of other 1.000 bicycles equipped with a more advanced version of the Copenhagen Wheel.

Made available for local governments, these bikes are used to create bike sharing services for all residents. But the promotional activities also encourage citizens to adopt their own one of this new transport. It is estimated that in 2013 in Italy 31 million pedal assisted cycles have been purchased.

In many large cities the use of a wide variety of smart and green vehicles is already widespread: they are made of new materials, many of which echo or recycled, low-impact, high security and technological. Among the bike-sharing programs in big cities that use innovative bicycles we have to mention the Velib program in Paris, the initiative of the city of New York that uses 10.000 bicycles powered by solar energy, the Bixi program in Montreal.

These sustainable transportation solutions still have relatively high costs for their innovative features. For public authorities who promote them, however, these solutions become affordable in terms of social and economic benefits, safeguarding health and improving the quality of life, and when compared with the costs caused by pollution. Moreover, also in short times these innovative solutions generate an interest among the most established private companies and young start-up who decide to invest in these sustainable means of transport, contributing to decreasing costs and therefore allowing everybody to afford them.

In this context and awarded with the prestigious [James Dyson Award](#) the Copenhagen Wheel which also relies on a shared strategy among local governments, research centres and innovative companies, has been a huge international success and it is a candidate for the leadership in the change of lifestyle that people along with governments are supporting and promoting.

To know more

[Copenhagen Wheel webpage](#)

[Superpedestrian.com](#)

[Senseable City Lab MIT](#)

[Copenhagen Wheel Press Release](#)

[Video in sharepowered](#)

[Article in The Boston Globe](#)

[Article in The Guardian](#)

[Article in asphaltandrubber.com](#)

[Artículo in Replanet](#)

[Articolo in Bici Elettriche](#)

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