Healthy and environmentally friendly cycle networks: a comparison between Cycle Highway and *Ecovia*

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Abstract

The EU Ministers for Transport have acknowledged cycling as a climate-friendly transport mode that needs to be integrated into multimodal policy. Besides, infrastructure needs to be provided to strengthen international, national, regional, and local cycling networks. Hence, Cycle Highways (CH) (Figure 1a) could contribute to the connection of different regional urban centres as a commute alternative for people that travel more than 5km to and from work or educational institutions every day (Dias & Ribeiro, 2020).

Some countries such as the Netherlands, Germany, Denmark, and the United Kingdom already rely on this type of cycling infrastructure to promote a healthier and environmentally friendly mode of transport, as people can switch from cars to bicycles to travel longer distances in a safe and secure environment. Only in Denmark, the implementation of 45 CH routes would have the potential to reduce the number of days of sickness by 40,000 days a year, ensuring a year reduction in CO_2 emissions of 1,500 tons, as well as reducing the number of car trips by one million (Super Cykelstier Office, 2017).

On the other hand, countries that do not have cycling as an established transport mode suffer from the problems caused by the high number of cars on streets, such as traffic congestion, noise, and pollution. In Portugal only 1% of the population use bicycles as the main mode of transport on workdays, and this bicycle absence on the streets is directly affected by the low presence of cycle networks that are convenient, safe, and that allow higher speeds (Dias & Ribeiro, 2020).

Recently, as a means to promote bicycle usage, the city of Guimarães (candidate to be the European Green Capital), in the north of Portugal, has invested in building a new bicycle and pedestrian route called "ecovia" (Figure 1b), which is intended to be a 16.5 km touristic and recreational cycle infrastructure to connect local green areas. The problem of the implementation of "ecovia" is the lack of proper infrastructure that allows cyclists to travel in adverse environmental situations, such as rain because parts of the route are not paved, and during night-time, because the route does not have lighting at all its length, thus during wintertime, when raindrop increases, the usability of greenways is limited, mainly because of the existence of the unpaved areas (Deenihan et al., 2013).

Also, according to studies regarding the usage of "ecovias", known as greenways in English, its importance to reduce pollution, obesity, and traffic congestion is negatively impacted by its usage for tourism. In order to attract physical activity, greenways should be located within areas with dense residence, mixed land-use, complete street network, and rich natural environment (Liu et al., 2016).

Therefore, this research focuses on comparing CH and "ecovias", as both are intended to be cycle routes to promote inter-municipal and regional connectivity. And, as it can be seen in Figures 1a and 1b, there are some structural differences between these two cycle

infrastructures, which can be a major factor to determine their usage and possible positive impact on the user's health and the environment.

Regarding the differences in the purpose of usage between greenways (tourism, recreational) and CH (commute), would "ecovias" promote a healthy lifestyle for users and major environmental benefits, such as the ones promoted by CH? Also, by the fact that the "ecovia" from Guimarães is very often intersected by secondary and primary roads, which forces cyclists to stop oftentimes, as well as used by pedestrians, would cyclists still feel unsafe to take longer journeys on it, which reduces the advantages of "ecovias" if compared to CH?

Figure 1a: Cycle Highway in Denmark
Source: (Capital Region of Denmark, n.d.)

Figure 1b: "Ecovia" in Guimarães
Source: (Municipality of Guimarães, 2021)

In short, both types of infrastructure promote the use of bicycles, but, as Cycle Highways provide more comfort for users, the positive outcomes can be better measured and felt by cyclists, while the introduction of a greenway restricts its benefits because of the leisure and touristic usage. With this in mind, it is very important to note that the possibility of improvement of some greenways in specific locations (e.g., greenways that connect important local and regional transport hubs or that are located in mixed-use areas) to become a CH could represent changes in the mode of transport used for commuting, as well as bring benefits for the transport system, the environment, and people's wellbeing.

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