

“FEASIBILITY AND INTEREST OF TRANSVERSAL HIGH SPEED RELATIONS IN EUROPE”

Author: Esther Aranda Mosqueda

Tutor: Andrés López Pita

Abstract

Since the high speed railway appeared in France in 1981, with the new line TGV Paris-Lyon, the different European countries have adopted this way of transport. The planning of these new infrastructures has been dominated, in general, by a centralist criteria and radial networks. This minor thesis ask for the following question: In the future, the plans of high speed infrastructures will continue being based on centralist criteria or would be possible that an interest by the transversal relations wake up?

In the context of transport linear infrastructure's planning, the concept of “centrality” is against to the one of “transversality”. In a centralist network the main axes leave from a main node with a radial structure. With this model, the main nodes gain accessibility, which aid to fortify and to hierarchize the position of the greater urban poles. However, a transversal network is made of multiple nodes of similar importance, allowing to communicate medium cities without having to justify the infrastructure by its service to the the country capital.

This minor thesis studies the birth and the evolution of the high speed rail in the four European countries in which it has had a greater development: France, Germany, Italy and Spain. In all of them it is observed that high speed born because it was necessary to solve the problem of saturation of the main railway lines: Rome-Florence, Mannheim-Stuttgart, Paris-Lyon and Madrid-Andalusia.

The success of the first lines in operation takes to the fast and progressive evolution of the high speed services. In the first stage, the main objective was to communicate the main cities in the smaller possible journey time. So, it was looked for the shorter line layouts and the best possible commercial speeds. The result is the radial morphology of the European high speed networks. Germany is the exception: this country presents a better population distribution and the high speed network is like a mesh in order to guarantee a good accessibility to all the territory.

In order to determine the feasibility and the interest of the transversal high speed lines, it's studied the potentiality of some possible corridors. In general, it's observed that the line layouts of the crossing relations have to cross regions with a complicated orography and, due to the urban polarity of the territory, with a low population density. The passenger traffic in a line is directly proportional to the volume of population of the cities that it communicates, so the expectable demand in these corridors seems to be insufficient. In addition to this, there is an existing radial network with plannings in developing. In general, and for the waited levels of demand in these relations, it seems better to do the crossing journeys by the existing lines than the construction of the new transversal ones.

The conclusion is that the planning of the Eroepean high speed networks is going to be based on radial models and centralist criterias.