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COMMITTEE ON SCIENCE AND TECHNOLOGY

EUROPEAN HIGH-SPEED TRAIN NETWORK

Preliminary draft opinion

of the Committee

(Rapporteur: Mr Mitterdorfer)

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1. The development of the European railways in the last 20 years has been characterised by inconsistencies and even contradictions. On the one hand, substantial technological progress in electrical traction, braking, coach suspension and track signalling systems has enabled trains travelling at speeds of over 200 km/h (so-called high-speed trains) to be operated commercially. On the other hand, the position of the railways on the transport market has constantly deteriorated, even in the case of activities that ought to benefit most from the introduction of faster and faster trains. These activities include of course the international rail transport of passengers and goods between large urban centres several hundreds of miles apart.

2. The limited impact of high-speed train systems on international rail links is due to several factors. In the first place, investment in this sector has in most European countries enabled only very slow quantitative progress to be made in the modernisation of existing rail networks and rolling stock. Secondly, several international links have to contend with natural barriers (Pyrenees, Alps, English Channel, Oresund-Fehmarn Belt), the crossing of which requires large-scale engineering works. Thirdly, it is clear that schemes undertaken by the various European railway companies either to modernise existing lines or to construct new ones have been guided by purely national considerations. For example, the introduction of the Paris-Lyon high-speed train (TGV) resulted from the congestion of the main rail route between the two great metropolitan regions of France (Paris and Lyon), while the modernisation of the railway network in the Federal Republic of Germany was greatly influenced by the need to shift the centre of gravity of an entire transport system which, until the end of the second world war, had revolved around Berlin.

3. In addition to the diversity of objectives there are divergences between the geographical, economic and demographic contexts in which modernisation efforts have been pursued. There is therefore nothing surprising about the emergence of a variety of technological approaches to high-speed rail systems. For example, among the railway companies constructing new lines for high-speed trains, there are two (those of the Federal Republic of Germany and Italy) which have opted for mixed lines - that is to say, ones where both passenger and goods trains use the same track.

The French railway company (SNCF), on the other hand, selected the exclusive passenger option for its TGV. Whether one or the other type of track is chosen has very important implications for the choice of route for new lines (maximum permissible incline, minimum curve radius), the choice of rolling stock (for example, maximum permissible axle load) and the choice of signalling and marshalling systems.

4. It would be wrong, however, to overestimate the differences between the technological choices made by the various companies so far in their efforts to develop and operate high-speed trains. In fact, the common or compatible aspects of the various schemes outweigh their dissimilarities. It is noteworthy, for example, that so far all the new lines constructed for high-speed trains in France, Italy or the Federal Republic of Germany have been compatible with the existing network. Moreover, in the three examples mentioned the construction of new lines has been accompanied by programmes for increasing train speeds on older tracks. Finally, it should be pointed out that the gauge of the existing or projected new specialised trains is the one recommended several years ago by the International Union of Railways. This means that the new high-speed trains can use either new or old tracks in most European countries.

5. The question of the compatibility of the various high-speed train systems is for the moment a hypothetical one bound up with the development of high-speed trains using techniques based on magnetic levitation with linear engines (MAGLEV systems). As far as Europe is concerned, this system is mainly being developed in the Federal Republic of Germany, where research has led to the construction of a prototype (TRANSRAPID) that has already exceeded a speed of 300 km/h during trials. At the present rate of technological development it seems that the TRANSRAPID could be operational by the year 2000 once the present problems concerning the safety and reliability of points and traction systems have been overcome. However, a more detailed evaluation of the system's overall economic viability remains to be made, with particular reference to the transshipments which such a system necessarily involves owing to its incompatibility with existing networks.

6. Although from the technical point of view (speed, energy-saving, etc) the MAGLEV concept is now recognised as having much greater development potential than any rail-wheel system, it would be rash to subordinate the urgently-needed decisions regarding the planning of a European high-speed train network to the commercial operation of MAGLEV trains. The very fact that the Federal Republic of Germany is simultaneously developing a high-speed train using the rail-wheel system (the ICE) and a MAGLEV type of train (the TRANSRAPID) is proof enough that even those making the greatest efforts in this field do not consider it wise to opt for a solution that would delay the large-scale operation of high-speed trains by at least ten years.

7. At European level it is urgently necessary to plan an international high-speed train network through the integration of national schemes and, at the same time, accelerate research and development co-operation in the field of industrial production. For example, it is essential to ensure throughout the network that the features of the new modernised lines match those of the trains using them. Compatibility of rolling stock characteristics (automatic coupling of coaches, suspension systems etc) must also be ensured. Finally, it would be highly desirable to take a joint decision on the electrical supply system so as to avoid the use of expensive variable-voltage locomotives on international lines. Several research and development programmes are underway in Europe (in the communities and within the EUREKA project), and significant progress may reasonably be expected in these sectors in the coming years.

8. There is no doubt that the operation of a European high-speed train network would be an important asset for the European economy generally. In particular, it would bring about the development of a series of new guided-transport technologies (centralised marshalling of traffic, computer-assisted

design of rolling stock, track signalling, driving aids, etc) that would enable specialised European industries to strengthen their positions on the respective world markets. Modern and effective management of the network, with in-depth use of the new information technologies, would lead not only to increased productivity of operations but also to improved quality of service by bringing the services provided more fully into line with users' expectations.

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9. The draft Resolution presented by the Committee on Economic Affairs and Development takes into consideration many of the elements advanced in the previous paragraphs and certainly all the important ones. There are however certain aspects of the text which could be improved. The draft Resolution only mentions the rail-wheel system but not the other technologies which are under development and also it makes no reference to the technological challenge of crossing the natural barriers that divide Europe. Furthermore it is important, in my opinion, that European countries, other than those directly concerned with the TGV-North project but also pursuing research in the field of high-speed trains, should be associated with it from the beginning.

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10. In the light of the foregoing considerations, the Committee on Science and Technology proposes the following amendments to the draft resolution of the Committee on Economic Affairs and Development:

i. after paragraph 6 insert a new paragraph as follows:

"Observing that the research efforts of several European countries have led to the development of different but - in the long run - not incompatible technologies among which the rail-wheel (French TGV and German ICE), the magnetic levitation (MAGLEV) and the air cushion systems;".

ii. after paragraph 8 insert a new paragraph as follows:

"Aware that the integration of the whole of Europe through a high-speed train network requires a solution to the technological problems of crossing natural barriers like the Pyrenees, the Alps or the English Channel;"

iii. in paragraph 11, insert the following sentence:

"and urges that other European countries also pursuing research in the field of high-speed trains should now be associated with it;".