Report on current state of existing limitations in UIC gauge rail connection between Spain and France

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This document tries to expose the current situation of the rail connection for freight transport in Standard European gauge (UIC) through Le Perthus tunnel between Spain and France. It is based on the information available at the date hereof.

CLYMA
THE GREEN LINE

DEVELOPMENT OF THE
CONNECTION
LYON-MADRID
ON THE MEDITERRANEAN
CORRIDOR

Co-financed by the European Union
Trans-European Transport Network (TEN-T)

From December 2010 the new UIC gauge line through Le Perthus tunnel between France and Spain is operational. The first service for passengers between Barcelona and Paris, with transfer at Figueres-Vilafant, was initiated on 19th December 2010, the first freight train used this line on 21st December 2010.

After 5 years in operation real rail traffic across this new line is much lower than expected. Currently, with regard to passenger services, the offer is limited to the following connections:

- Barcelona – Paris (4 daily trains on each direction).
- Barcelona – Lyon (1 daily train on each direction).
- Barcelona – Toulouse (1 daily train on each direction).
- Madrid - Barcelona – Marsella (1 daily train on each direction).

Although passenger traffic is below the expectations, the situation is not as dramatic as it is for freight. Currently, only four regular services use the line: two from Hupac, one from Kombiverkehr and a car rail service. The operators that use the old Port Bou line have not changed their traffic to UIC gauge and still tranship the cargo or change axis at the border. Some services that tested the new line have been cancelled. Moreover, new services currently being designed consider again old connection via Port Bou more viable in terms of cost and feasibility than the new one in UIC gauge.

These facts have been confirmed by the results from other studies such as I-FreightMed project ones and several rail operators' opinions.

It is necessary to highlight that the new rail connection is a unique case in the world of a line designed for mix use both for high-speed for passengers and massive freight transport. The mixed character of the line limits substantially its use for freight due to the priority given to passenger trains and the important security and operative limitations required for high-speed lines. This implies as well limited availability of commercially suitable slots for freight services.

Besides the structural limitations that such a line presents for freight transport, additional limitations have been identified during these five years. The main current bottleneck is the lack of competitive and diversified traction offer. Indeed, between Barcelona and Le Soler nowadays there are only 3 tandems of locomotives available. These locomotives, which were originally designed for passengers, were adapted for freight transport in this section (tandems of 2 locomotives are needed instead of a single locomotive due to infrastructure and operational limitations of the line: triple tension and signalling, high gradient, etc. that will be further detailed in this document).

The lack of traction offer is due to the following reasons:

- There is no competition of UIC traction in Spain. The few existing locomotives belong to Renfe.
- These locomotives are not available to be rent to other operators (not assigned to Rosco). Therefore, they are not accessible for third parties.

- The lack of traction equipment could be balanced with the opening of a rent market in Europe or the adaptation of existing materials to the required technical and market conditions. However, the approval and homologation processes for circulation are too complex and expensive, becoming a huge barrier to the entrance of new rail operators. The unusual operational features of this section make the material adaptations only useful for this Mediterranean Corridor section and not for the rest of the network.

- The difficulties in the homologation and the high cost of new equipment prevent private operators to access specific traction equipment for such a limited train route like this one.

- The lack of a credible calendar of works across the Mediterranean Corridor and the poor definition of the functional specifications of the rail line that will be constructed prevent private operators to make investments for fear of not being suitable to future requirements in the whole Corridor. This fact affects both rolling stock investments and terminal adaptation.

A second critical point is the high cost of UIC traction offers that range more than doubling traction cost for similar distances in the national rail network (between 22 and 35 €/km). This is mainly due to the lack of competition, but also due to other factors such as:

- Production costs in UIC are very high, possibly due to allocation criteria and amortization of adaptation of materials to UIC, three voltages and 2 safety systems costs.

- Currently, the trains in Spain and France cannot circulate from origin to destination with the same composition and they have to change of locomotive and driver in Le Soler, with the consequent over cost this supposes, as they have to add 2 traction costs fort short and proportionally more expensive routes.

- The concession toll of Le Perthus increases rail services cost and reduces its competitiveness and its logistic supply attractiveness. At this moment, for intermodal and car services this toll is more than 800€/train, what can imply a 15% increase in the traction cost from Barcelona to the border.

- In France, the traction costs are very high (double than in Spain) and also the shunting costs are high between Le Soler and Perpignan.

It has to be taken into account that along this section, rail competes with road; with much more adjusted costs such that the modal exchange will not occur if rail transport use costs are not competitive against truck costs.

A third aspect which limits the line use is the lack of available train slots which are commercially feasible. Although it is true that theoretically the line has a high available capacity due to its low utilization, the truth is that it is difficult to obtain appropriate slots for the demand necessities. Partly due to the non-availability of traction (see previous problem) in the requested periods, but also for additional reasons such as the following ones:

- Line closure due to maintenance works. For this reason currently it is not possible to cross Le Perthus tunnel during a wide range of hours of night. And often, these are highly demanded slots for freight.

- The high rail congestion in the French section, especially in the Narbonne-Nimes section, makes it difficult to extend services northwards, especially with commercially attractive slots.

- In a near future and if the speed for passenger trains is increased, further limitations for freight trains may appear in the Mollet – Vilobí d'Onyar (Girona) section, reducing slot availability.

Likewise, infrastructural and interoperability problems persist along the connection between Spain and France, problems which limit the future use of the line:

- Three different types of electrification in the railway network (1.500 V in France, 3.000 and 25.000 in Spain) that requires multisystem locomotives (for the tree electrifications).

- The existence of three different signalling and controlling systems that increase the cost of freight trains. The high speed line uses the ERTMS system whereas conventional freight uses the ASFA system (in Spain) and the KVB (in France). Therefore it is necessary to adapt the system of the high speed line to the freight systems ASFA/KVB or include the ERTMS system to the current locomotives.

- The slope of 18 0/00 of Le Perthus tunnel and the new Girona tunnel endangers the maximum cargo of freight trains, so that very heavy trains require two locomotives and reinforced traction hooks in the wagons.

- Circulation difficulties exist with the third rail (Barcelona-Mollet) due mainly to the track changes.

- One of the advantages the new UIC line was supposed to have for freight trains - the circulation of large trains - has disappeared. In December 2013, ADIF informed that due to safety regulations the trains that drive on UIC track cannot overpass 500 metres. In the continuation of the Madrid along Zaragoza line, there is the same problem of limitation of train length. Apparently, this limitation should be solved in short term, but currently it still remains. This is a huge limitation, as rail operators consider the train length one of the critical aspects for a feasible service.

Even though all studies highlight the existence of an important demand for the line (10.000 trucks cross the border on a daily basis), while the identified problems are not solved, reducing costs and making competitive the connection, rail operators will not consider opening new routes using the connection through Le Perthus. We should never forget that the line suffers a design structural limitation that will not be solved unless high-speed passenger trains are separated from freight trains.

As a last observation, it is important to mention that the low number of trains has reduced significantly the Le Perthus tunnel concessionaire revenues. In March 2015 the concessioner submitted a pre-bankruptcy with a debt of over 400 million euros, according to press information. At the beginning of July it was published the news that the concessionaire had avoided the bankruptcy after an extraordinary capital contribution of its partners, but in mid-July the bankruptcy process has been opened in the judicial administration of Girona. These financial difficulties add doubts among rail operators about the future and viability of the connection.

CLYMA project consists of the implementation of the corridor approach to a section of the **Mediterranean corridor**, concretely to the Western part of the corridor and specifically to the Lyon-Madrid Axis.

The project comprises of studies and actions on the organization and optimal implementation of the **TEN-T network**, taking into account long term perspectives, environmental aspects and associated needs, as well as studies that promote environmental sustainability, resource efficiency and low-carbon transport within an integrated transport concept. This should stimulate the deployment of the **Green Corridor concept.** The project also intends to develop a **managerial structure** for the intermodal corridor.

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