



IARO report 19.13

Improvements to access to airports under the TEN-T programme



Work on the Josephat – Schuman tunnel, which will connect Brussels Airport to the European Quarter of the city and to Namur and Luxembourg

IARO Report 19.13: Improvements to access to airports under the TEN-T programme

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1. Introduction

Introduction

This report looks at opportunities to improve rail access to airports in Europe under the recently-announced enhanced EU transport investment (TEN-T) programme. This introduction includes a reminder of the value of and air-rail connection and a brief description of EU rules on air passenger rights which may have implications for air-rail links. The report then summarises the EU policy and sets out the current situation at the 38 airports in the Core Programme and any known plans for enhancements, and then any proposals under the TEN-T programme announcement. It also gives some recommendations for priorities. It will be updated as new information comes to hand.

The value of an air-rail connection

Rail infrastructure at an airport has value – mainly for passengers (airport employees or air passengers), but to a lesser degree for cargo (air cargo, fuel and building materials) too. Railways at airports tend to have one of two functions. Some railways take air passengers to and from the airport, while other services seek to compete with air services. The former is more common, and overlaps and duplication occur.

Cooperation between railways and air transport take place in two ways. Some railways provide a shuttle between airport and city (and thus improve the end-to-end journey) and others extend the catchment area of an airport and its airlines by regional, national or international train services). As well as expanding the catchment area, this can better use runway capacity by replacing some short-haul flights.

Competition between air and rail may come with high speed rail services at airports, although it is more common for this to be by city centre to city centre high speed rail services (like London-Paris).

The views of aviation stakeholders in Europe can be found in “An aviation stakeholder’s view on intermodality: Community observatory on airport capacity” published in November 2013¹ (and itself a product of the 2011 White Paper²). A key conclusion is that, “funding for intermodal nodes should be a top priority for EU funding (both under the Connecting Europe Facility and under Regional Funds). This is especially important for physical integration of modes at airports.” The report also mentions resilience as an advantage of having a rail connection at an airport.

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http://ec.europa.eu/transport/modes/air/airports/doc/observatory/an_aviation_stakeholders_view_on_intermodality_29-11-13.pdf

² “Roadmap to a single European transport area” <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0144:FIN:EN:PDF>

One measure of value is shown in recently published research from 12 US cities. This³ looked at six cities with a good rail connection between airport and city and six comparable ones without. Hotel occupancy and achieved room rates were better in the former than the latter. In the former, hotels within ¼ mile (½km) of transit also had better occupancy and achieved better rates than those further away.

The EU TEN-T policy on improving rail links to airports therefore has value to both passengers and employees.

Air Passenger Rights

On 13 March 2013, the EU launched a consultation on revision of some of the air passenger rights enshrined in regulation 261/2004 which came into force in 2005⁴. The part affecting integrated air-rail journeys is a proposed amendment to Article 3 paragraph 4 of Regulation 261/2004. The amendment adds that, when part of a journey is carried out by another mode of transport, the Regulation applies to the whole journey and that the part by the non-air mode is regarded as a connecting flight.

This could have implications for railways, especially short-distance ones, with integrated air-rail tickets. For example, if a passenger with an integrated round trip ticket between Sydney and London Paddington (using Heathrow Express) misses his return flight because Heathrow Express is delayed, who has to compensate him, and how much? It is likely that the Regulation will effectively set aside any restrictions on refunds in a railway company's conditions of carriage. Requirements to provide accommodation to passengers delayed by exceptional disruption do not apply to flights of less than 250km by aircraft of less than 80 seats. This is because the obligation can be out of proportion to the carrier's revenue. It is not yet clear if a similar provision will apply to railways, especially short distance ones but, if not, there is then a disincentive to offer integrated ticketing.

³ A new partnership: rail transit and convention growth. APTA and US Travel Association November 2013

⁴ See http://europa.eu/rapid/press-release_MEMO-13-203_en.htm

2. The new TEN-T policy

Introduction

On 17 October 2013, the EU announced a new transport infrastructure policy⁵. This would triple funding for transport infrastructure to “transform the existing patchwork of European roads, railways, airports and canals into a unified trans-European transport network (TEN-T)”. The “core transport network” would be based on nine major corridors, and would be completed by 2030.

The announcement said that, “The new core transport network will be supported by a comprehensive network of routes, feeding into the core network at regional and national level. The comprehensive network will ensure full coverage of the EU and accessibility of all regions. The aim is to ensure that progressively, and by 2050, the great majority of Europe's citizens and businesses will be no more than 30 minutes' travel time from this comprehensive network.” Among other things, the Core Network would connect “38 key airports with rail connections into major cities”. The Core Network will be the only part of the transport network eligible for EU co-financing.

It said that, “The new policy triples EU financing to €26 bn for transport for the period 2014-2020, at the same time it refocuses transport financing on a tightly defined new core network. The core network will form the backbone for transportation in Europe's Single Market. It will remove bottlenecks, upgrade infrastructure and streamline cross border transport operations for passengers and businesses throughout the EU. Its implementation will be pushed ahead by the setting up of 9 major transport corridors that will bring together Member States and stakeholders and will allow to concentrate tight resources and achieve results.”

The Corridors

The nine major transport corridors, shown on the map on the next page, are:

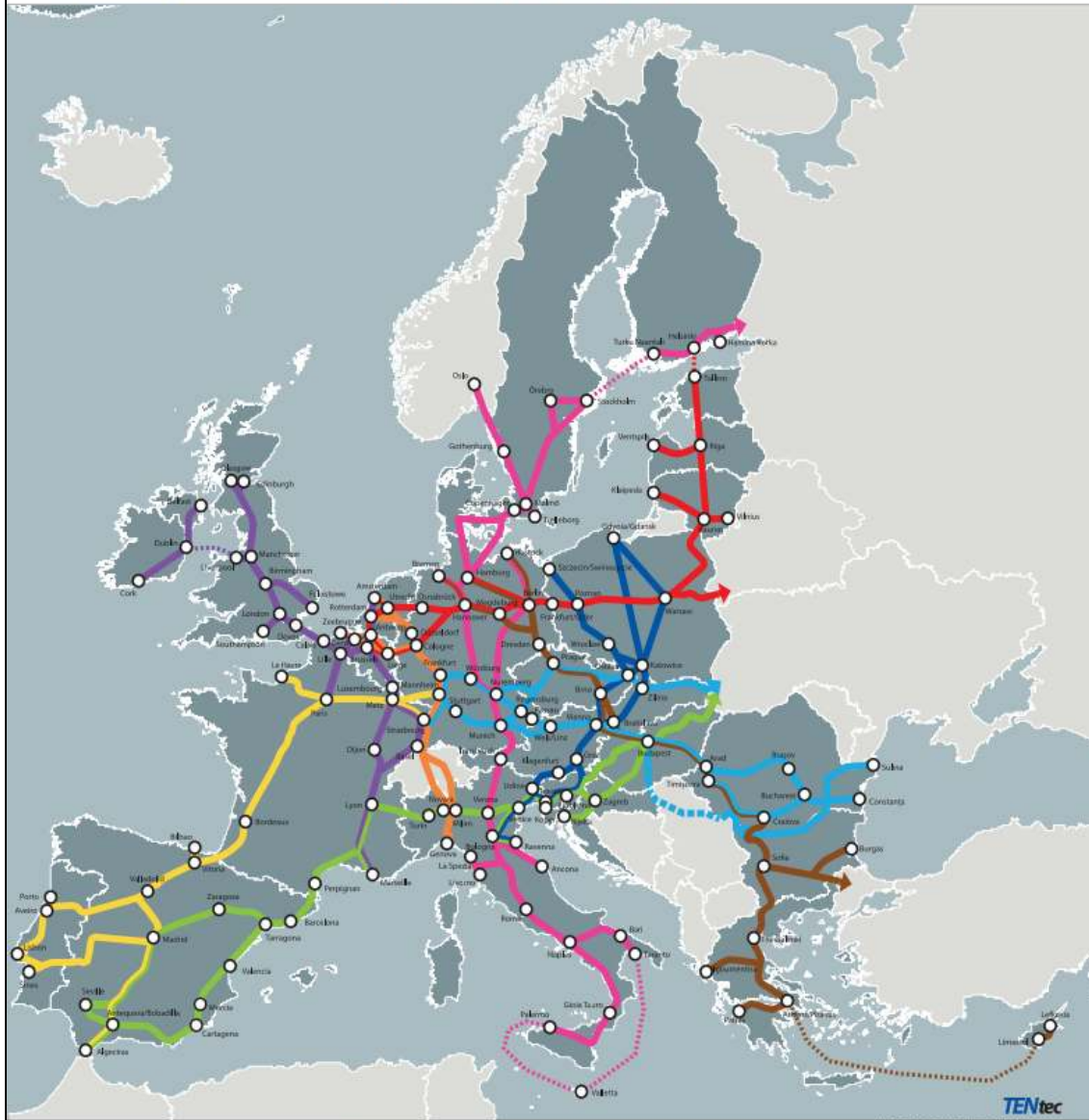
- Baltic – Adriatic
- North Sea – Baltic
- Mediterranean
- Orient/East Mediterranean
- Scandinavian - Mediterranean
- Rhine – Alpine
- Atlantic
- North Sea - Mediterranean
- Rhine – Danube

⁵ http://ec.europa.eu/transport/themes/infrastructure/news/ten-t-corridors_en.htm, 17 October 2013 accessed 7 November 2013



European
Commission

TRANS-EUROPEAN TRANSPORT NETWORK TEN-T CORE NETWORK CORRIDORS



Legend

- BALTIC - ADRIATIC
- NORTH SEA - BALTIC
- MEDITERRANEAN
- ORIENT / EASTERN
- SCANDINAVIAN - MEDITERRANEAN
- RHINE - ALPINE
- ATLANTIC
- NORTH SEA - MEDITERRANEAN
- RHINE - DANUBE

TENtec

BASED ON THE OUTLINE OF THE NETWORK, VERSION OF 2014, MARCH 2013

The corridors are described in full on the European Commission's Mobility & Transport website⁶. On this site there are also datasheets showing how each member state is affected (generally referred to below as 'the documentation').

Detail

More information, including a list of the corridors, is given in a press release, "New EU transport infrastructure policy – background"⁷. The proposals, including the maps, were approved by the European Parliament on 19 November⁸. The accompanying announcement said that financing for transport infrastructure will triple for the period 2014–2020 to €26.3bn (at current prices). This Connecting Europe Facility (CEF) of the multi-annual financial framework (MFF) will effectively act as "seed capital" to stimulate further investment by Member States to complete difficult cross-border connections and links which might not otherwise get built. It is estimated that the cost of implementing the first financing phase for the core network for 2014–2020 will be €250 bn.

The announcement noted that, "In practice there are five main problem areas which need to be tackled at EU level:

- Missing links, in particular at cross-border sections, are a major obstacle to the free movement of goods and passengers within and between the Member States and with its neighbours.
- There is a considerable disparity in quality and availability of infrastructure between and within the Member States (bottlenecks). In particular, East-West connections require improvement, through the creation of new transport infrastructure and/or maintenance, rehabilitation or upgrading of existing infrastructure.
- Transport infrastructure between the transport modes is fragmented. As regards making multi-modal connections, many of Europe's freight terminals, passenger stations, inland ports, maritime ports, airports and urban nodes are not up to the task. Since these nodes lack multi-modal capacity, the potential of multi-modal transport and its ability to remove infrastructure bottlenecks and to bridge missing links is insufficiently exploited.
- Investments in transport infrastructure should contribute to achieve the goals of reduction of greenhouse gas emissions in transport by 60% by 2050.
- Member States still maintain different operational rules and requirements, in particular in the field of interoperability, which significantly add to the transport infrastructure barriers and bottlenecks."

It also clarified that "the core network will connect 38 key airports with rail connections into major cities". The reference to 38 key airports derives from Article 47(3) of COM(2011) 650, "Proposal for a Regulation of the European Parliament and of the Council on Union guidelines for the development of the Trans-European Transport Network"⁹ which says, "The main airports indicated in Part 1b of Annex II shall be connected with the railway and road

⁶ http://ec.europa.eu/transport/themes/infrastructure/new-core-network-key-figures_en.htm accessed 11 November 2013

⁷ http://europa.eu/rapid/press-release_MEMO-13-897_en.htm 17 October 2013 accessed 7 November 2013

⁸ See http://ec.europa.eu/transport/newsletters/2013/11-22/articles/cef_en.htm

⁹ Of 19 October 2011

transport infrastructure of the trans-European transport network by 31 December 2050 at the latest. Taking into account potential traffic demand, such airports shall be integrated into the high speed rail network wherever possible.”

Lists of the airports involved have been examined in the documentation, “TEN-T guidelines after informal trilogues Annex II – list of nodes of the core and comprehensive networks”. There are three lists – the Article 47(3) core network (the subject of this report), the others on the core network, and those on the comprehensive network. The 38 airports on the Core Network are listed in the next section (see page 12). They were chosen because each one carries more than 1% of the total annual air passenger volume within the EU¹⁰. For each of them, the present situation is noted in a separate section (starting on page 14) together with known future plans and references in the documentation. This analysis uses data from IARO’s unique database. A summary of the analysis is given on page 13.

History

The TEN-T programme was reviewed in 2009¹¹: the review was opened by the Green Paper “Towards a better integrated trans-European transport network at the service of the common transport policy”, published in February 2009¹². It questioned whether the current planning approach to TEN-T projects should be maintained or whether another approach should be implemented, and proposed three options:

1. Status quo
2. A single layered approach based on priority projects and extension to “priority networks”
3. A dual layered structured based on comprehensive network and a core network.

It said that, “The second option was meant to extend priority projects to ‘priority networks’ involving the definition of ‘geographical corridors’ comprising priority projects plus important nodes (main source of congestion & other inefficiencies, i.e. urban interfaces), ports & airports. Main advantage is that this would promote the multi-modal dimension (which is lacking in current Ten-T).”

In March 2011, the European Commission published its White Paper on Transport¹³. This included “Ten Goals for a competitive and resource efficient transport system: benchmarks for achieving the 60% GHG emission reduction target”. No. 6 of these was: “By 2050, connect all core network airports to the rail network, preferably high-speed; ensure that all core seaports are sufficiently connected to the rail freight and, where possible, inland waterway system”.

¹⁰ See footnote 2 to the “Annual report of the coordinator Priority Project 17”, November 2012

¹¹http://www.central2013.eu/fileadmin/user_upload/Downloads/outputlib/SoNorA_3.3.3_uploaded_13_10.pdf?PHPSESSID=d6a884795f28d970a10ce50a44a46449

¹² <http://eur->

[lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52009DC0044:EN:HTML:NOT](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52009DC0044:EN:HTML:NOT)

¹³ “Roadmap to a single European transport area” <http://eur->

[lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0144:FIN:EN:PDF](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0144:FIN:EN:PDF)

This was followed by a proposal for legislation in 2011¹⁴. The key paragraph was no. 304, which said that, “The main airports indicated in Part 1b of Annex II shall be connected with the railway and road transport infrastructure of the trans-European transport network by 31 December 2050 at the latest. Taking into account potential traffic demand, such airports shall be integrated into the high speed rail network wherever possible.”

It is understood that the concept of Priority Projects, used up to now in the TEN-T programme, has been subsumed within that of corridors within the Core Network. However, references to the Priority Projects are made where appropriate in this report, to clarify the historic background.

¹⁴ “Proposal for a Regulation of the European Parliament and of the Council on Union guidelines for the development of the trans-European transport network” <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52011PC0650R%2801%29:EN:NOT> 19 October 2011

3. The Article 47(3) core network

The 38 Airports

The 38 key airports on the Core Network list are:

Airport	Rail link
Amsterdam Airport Schiphol	Existing
Athens Spata International Airport (Eleftherios Venezelos)	Existing
Barcelona	Existing
Berlin Brandenburg Willy Brandt International	Existing
Birmingham International	Existing
Bruxelles/Brussel National	Existing
Budapest Liszt Ferenc	Existing
Dublin	Planned
Düsseldorf	Existing
Edinburgh	Planned
Frankfurt/Main	Existing
Glasgow	Recommended
Hamburg	Existing
Helsinki Vantaa	Planned
København Kastrup	Existing
Köln-Bonn	Existing
Lisboa Portela	Existing
London Gatwick	Existing
London Heathrow	Existing
London Luton	Existing
London Stansted	Existing
Lyon St-Exupéry	Existing
Madrid Barajas	Existing
Manchester	Existing
Milano Linate	Planned
Milano Malpensa	Existing
München	Existing
Nice Côte d'Azur	Planned
Palma de Mallorca	Planned
Paris Charles de Gaulle	Existing
Paris Orly	Existing
Praha Ruzyně	Planned
Rīga	Planned
Roma Fiumicino	Existing
Stockholm Arlanda	Existing
Stuttgart	Existing
Warszawa Chopin	Existing
Wien Schechat	Existing

Of the 38 airports on the list, 29 have a rail connection now, there are firm plans for a link at 8 of the others and a link has been recommended for the remaining one airport.

In the datasheets, the national documentation accompanying the TEN-T policy announcement¹⁵, there is reasonably specific mention of 10 airport projects (planned or in progress) and a vague or possible reference to 9 more. At 3 of the airports with only a planned connection (Helsinki, Prague and Riga), the future plans are endorsed by the documentation. The other airports specifically mentioned are:

- Birmingham (HS2 link),
- Brussels (Schuman – Josephat connection),
- Lyon St-Exupéry (Lyon – Torino high speed line),
- Manchester (Northern Hub and electrification),
- Paris Orly (Southern By-Pass),
- Stuttgart (high speed line to Ulm) and
- Vienna (Vienna – Bratislava connection).

There is no relationship between the 9 with a vague reference in the documentation (Amsterdam Schiphol, Athens, Edinburgh, Frankfurt, Lisbon, Heathrow, Milano Malpensa, Paris CDG and Stockholm Arlanda) and airports with only future plans. This may be because the documentation (the national data sheets) was obviously nationally compiled. While the format of each sheet is standard, the content is not (and, arguably, would benefit from editing to ensure compatibility of information provision).

Individual airports

Each of the 38 airports is described in the boxes below.

¹⁵ See reference 6

Airport	Amsterdam Schiphol
Current status	<p>Schiphol Airport is served by frequent regional trains to many parts of the country, and is on the HSL-Z (high speed line – south) to Brussels and Paris. The latter is used by Thalys high speed trains on the Paris – Brussels Amsterdam route.</p> <p>There are some conventional trains using parts of the HSL-Z too, although because of the major issues with the rolling stock which was planned to be used on this line, the exact situation is uncertain at the time of writing.</p>
TEN-T corridor	This route is part of the North Sea – Mediterranean Corridor, connecting ultimately to Marseille.
Future plans	From 2016, there are likely to be 2 Eurostar trains each way each day between Amsterdam and London.
Recommendations for priorities	Local and national authorities are trying to resolve the problems caused by the late delivery of seriously defective rolling stock. It is unlikely that any action at EU level would add much: a watching brief is recommended.

Airport	Athens
Current status	There is a suburban line from the airport into central Athens, and a slower metro. Apart from at the airport itself and close to the city, they use the same tracks and stations. Both opened in 2004.
TEN-T corridor	This is on the Orient- East Mediterranean Corridor: it is not clear how this interfaces with the airport.
Future plans	There are no known plans for improvements
Recommendations for priorities	Connections to the city and nearby residential and industrial areas are adequate. No action needed.

Airport	Barcelona
Current status	<p>For some time, this airport has had a half-hourly suburban service from central Barcelona which goes to a station close to what is now the old terminal, Terminal 2. Terminal 1 is awkwardly served by bus shuttle from the station.</p> <p>The high speed line between Madrid and Barcelona (and, ultimately, France) passes close to the airport but without a direct connection.</p>
TEN-T corridor	<p>This is on the Green Line, the Mediterranean Corridor, which links the Iberian Peninsula with the Hungarian-Ukrainian border. It follows the Mediterranean coastlines of Spain and France, crosses the Alps towards the east through Northern Italy, leaving the Adriatic coast in Slovenia and Croatia towards Hungary.</p>
Future plans	<p>The orbital Line 9 of the metro is planned to terminate at the airport: it has a completion date of 2014.</p> <p>There are plans for a new heavy rail connection direct Terminal 1, bypassing Terminal 2, funded by PPP. See "New passenger rail contract signed in Catalunya" http://www.railwaygazette.com/news/passenger/single-view/view/new-catalan-regional-and-suburban-rail-contract.html 24 July 2013 accessed 29 July 2013</p> <p>Nothing specific is said in the documentation about the airport.</p>
Recommendations for priorities	<p>National plans (line 9 of the metro and the planned heavy rail connection to terminal 1) are probably adequate. Given the nature of the airport's traffic and catchment area, it is unlikely that a direct high speed connection would be worth-while.</p>

Airport	Berlin Brandenburg
Current status	As this report was being prepared, no firm opening date for this airport is known. However, it already has a station underneath, for both long-distance high speed trains and for the Berlin S-Bahn (lines S9 and S45): these will provide a city centre connection.
TEN-T corridor	On the Orient – East Mediterranean Corridor.
Future plans	<p>There is an aspiration to run an Airport Express, but this is likely to be slower than originally planned. Objections from people whose property backs onto the proposed route, a disused rail line, mean that at least in the short term the express will have to take a longer route.</p> <p>Nothing specific is said in the documentation about the airport.</p>
Recommendations for priorities	The airport is not optimally placed for the high speed rail network: trains will need to make a detour to serve it. Long distance services need to be coherent and designed to serve passengers making out-and-back in a day journeys (for example, journeys like Leipzig – Paris via Berlin). Because of the local railway geography (and, possibly, the reluctance of the railway company to help a competitor), it is possible that this will not happen. See Lyon St Exupery for a sub optimal example.

Airport	Birmingham
Current status	<p>The current station is a 90 second automated people mover ride to the airport. The station is on the part of the West Coast Main Line which loops through Birmingham. Birmingham International Station is served by frequent intercity trains between London and the West Midlands, by cross-country trains on the south-west – north-east/north-west spine, and commuter trains on the Birmingham – Coventry – Northampton line. It is also the terminus of regional trains from parts of Wales. There are proposals for an extension of the city's light rail network to Coventry: this will serve the airport. See “£2bn transport package to reap maximum economic benefits from HS2” http://www.centro.org.uk/newsroom/PressReleases/PressRelease71716.aspx 24 October 2013 accessed 25 November 2013</p>
TEN-T corridor	<p>This is on the North Sea - Mediterranean Corridor. HS2 is mentioned in the documentation.</p>
Future plans	<p>Work is under way to enhance connections to the airport through the Birmingham Gateway project.</p> <p>The route of phase 1 of the planned High Speed 2 Line serves Birmingham. The proposed HS2 station will be somewhat further away than the existing station (and probably connected by an extension of the automated people mover). In the context of the UK government's review of airport capacity, the airport authority has put forward plans for a second runway with a new terminal adjacent to HS2.</p>
Recommendations for priorities	<p>An immediate priority is to rename the station Birmingham Airport. The longer term plans for HS2 will significantly enhance the airport's accessibility, and priority should be given to ensuring that the people mover is seamless.</p>

Airport	Bruxelles/Brussel National
Current status	The airport has excellent regional connections to the east, the north and the south west (including to the city of Brussels). The link to the north has the potential for use by high speed trains, although at the moment there are no firm plans for this.
TEN-T corridor	This is on the North Sea - Mediterranean and North Sea – Baltic Corridors.
Future plans	<p>The Schuman – Josephat tunnel, now under construction, will create a link between the airport and the south and east of the country and to Luxembourg, as well as serving the European Quarter of the city. There are also plans for a new tram line to serve the airport. See “Systems factfile: Brussels” by Neil Pulling in Tramways & Urban Transit November 2011 p438</p> <p>The datasheet for the North Sea - Mediterranean Corridor talks about “studies and works (North-South connection for conventional and high-speed)” under the heading of Brussels, and very briefly mentions the improvements on the Luxembourg line.</p>
Recommendations for priorities	Future plans should be supported.

Airport	Budapest Liszt Ferenc
Current status	There is a half-hourly regional train service to the (currently disused) Terminal 1: this is some minutes walk from Terminal 2.
TEN-T corridor	It is on the Rhine – Danube and Orient – East Mediterranean Corridors.
Future plans	<p>There has been talk of a dedicated air-rail link, and also a light rail connection between the two terminals.</p> <p>In the documentation for the Rhine - Danube Corridor, a high speed link between Budapest and Arad, on the Romanian border, is being studied. This would probably serve the airport.</p>
Recommendations for priorities	A better service, and one which connects directly to Terminal 2, is a priority here.

Airport	Dublin
Current status	This airport is not currently rail connected.
TEN-T corridor	On the North Sea - Mediterranean Corridor.
Future plans	<p>There have been plans for two lines of the Dublin Metro to serve it – Metro North from the city centre, and Metro West from the western suburbs. Both proposals were affected by the 2008 financial crisis, with planning on Metro West suspended and Metro North deferred until at least 2015. See “Dublin light rail expansion shelved for BRT plan” Tramways & Urban Transit November 2011 p420</p> <p>Iarnród Éireann (Irish Railways) suggested a Parkway station with a bus shuttle or a low-cost spur from their Dublin – Belfast main line (or the former as a first phase and the latter subsequently). See “Focus on the core network” in Railway Gazette International April 2012 p25 It is understood that both ideas have been rejected.</p> <p>Nothing specific is said in the documentation about the airport.</p>
Recommendations for priorities	The three projects all have merit. The first two – the metro schemes, giving connections to the city centre and residential areas to the west – have been deferred for financial reasons. The third, the heavy rail scheme, would connect other parts of Ireland – north and south of the border – to the airport. This may be to the detriment of Belfast’s airports, but already people in some parts of Northern Ireland find it easier to reach Dublin than Belfast airports. However, this does permit choice: Dublin airport has direct connections to places Belfast lacks and no doubt the reverse is also true.

Airport	Düsseldorf
Current status	This airport has two stations. One has been the terminus of local S-Bahn trains (lines S7 and S21) since 1973, and is actually at the airport. The other is some distance from it, connected by a Siemens elevated automated people mover, and this is served by a wide range of trains (314 a day, according to “Düsseldorf boosts rail connections”, by Professor Edmund Krieger in Airports International, January/February 2010 p38) including regional, intercity and Thalys high speed trains.
TEN-T corridor	On the Rhine – Alpine Corridor.
Future plans	<p>There have been plans for an automated Maglev link in the Ruhr, serving the airport, but these were abandoned over a decade ago.</p> <p>Nothing specific is said in the documentation about the airport.</p>
Recommendations for priorities	Connections to the city and region are adequate. No action needed.

Airport	Edinburgh
Current status	The airport is not currently rail served.
TEN-T corridor	The northern extremity of the North Sea - Mediterranean Corridor runs southwards in a Y-shape from both Edinburgh and Glasgow: the two routes connect close to both cities. It is assumed that the Edinburgh link of the Y would serve the airport, although this is not specifically mentioned in the documentation.
Future plans	A plan for a multi-direction heavy-rail connection under the airport was abandoned in 2007. A light rail line is under construction, and should open in May 2014: this will offer a direct connection to the city centre and to nearby main line stations.
Recommendations for priorities	The heavy rail service would have given the airport a direct rail connection to Fife and the Stirling/Perth area. The light rail connection to the city will be adequate for airport – city connections. It is unlikely that anything compatible with EU TEN-T proposals would improve long-distance connections in a way which would build up the airport’s markets.

Airport	Frankfurt/Main
Current status	<p>Frankfurt airport has been on the regional and suburban network since 1972. It has been on the high speed network for over 10 years: high speed trains have their own dedicated station at the airport. There are 210 high speed trains carrying 23,000 passengers a day to and from the airport. Ref. presentation by Mr. Brummer of ETC Consult at IARO's Air//Rail 2012 conference in Berlin. There are about as many regional and commuter trains a day as well.</p> <p>There is an air-rail code share on the Köln, Bonn and Stuttgart sectors: this was used by over 290,000 passengers on the 26 daily trains in the code-share agreement in 2011. This was a 20% increase on the previous year.</p> <p>See "AIRail celebrates ten years successful service" Lufthansa press release http://www.lufthansagroup.com/en/press/news-releases/singleview/archive/2013/may/15/article/2457.html 15 May 2013 accessed 19 July 2013</p>
TEN-T corridor	The airport appears to be on the Rhine – Alpine Corridor
Future plans	The datasheet for this Rhine - Alpine corridor says under rail, "Frankfurt – Mannheim: studies ongoing", which is presumably a reference to the aspiration for a faster route between Frankfurt, Mannheim and Stuttgart. This is part of former Priority Project 24 (See http://tentea.ec.europa.eu/download/map_review/new_fiches/2007de24030s_final.pdf accessed 29 November 2013)
Recommendations for priorities	A faster and more frequent service to Stuttgart would be beneficial. It now runs every other hour on a clock-face schedule, which gives sub-optimal connections with the waves of flights at Frankfurt airport. This affects patronage.

Airport	Glasgow
Current status	The airport, to the south-west of the city, is not connected to the rail network.
TEN-T corridor	The northern extremities of the North Sea - Mediterranean Corridor run southwards from both Edinburgh and Glasgow: the two routes connect close to both cities.
Future plans	<p>A link using a new spur from Paisley into the airport failed to gain sufficient budgetary and political support and was abandoned in 2009 despite some of the associated works (which could be used for the commuter service on the Glasgow- Ayr line) being at an advanced stage. Subsequently, a tram-train alternative was put forward: the lighter infrastructure needed would have obviated some of the problems the heavy rail system would have caused within the airport. (See "GARL rides again" in The Rail Engineer April 2012 p4) The Airports Commission has now recommended that other options should be considered.</p> <p>It is not obvious how Glasgow Airport would be connected to the TEN-T Corridor, since the airport is to the south-west of the city and the line would need to run south-east to connect with the line from Edinburgh. That said, the lines on the map in the documentation are necessarily very diagrammatic, so a connection may be possible.</p>
Recommendations for priorities	There remains a case for an air-rail link, either heavy rail or the proposed tram-train system.

Airport	Hamburg
Current status	The airport is the terminus of an S-Bahn suburban railway from the city centre, completed at the end of 2008. (www.s-bahn-hamburg.de website, accessed 12 December 2008)
TEN-T corridor	The Scandinavia - Mediterranean Corridor enters the city from the north, and would presumably pass close to the airport.
Future plans	Nothing specific is said in the documentation about the airport.
Recommendations for priorities	The airport has excellent connections to the city: given the size of the airport it is unlikely that other rail services could be justified.

Airport	Helsinki Vantaa
Current status	New air-rail link under construction
TEN-T corridor	It is on the Scandinavia - Mediterranean Corridor, and the airport rail connection is specifically mentioned in the supporting documentation. Former Priority Project 12 includes connecting the Nordic Capitals to the airport. (http://tentea.ec.europa.eu/download/map_review/new_fiches/2007_fi12050p_final.pdf accessed 29 November 2013)
Future plans	A long-planned suburban railway connection will serve the airport: it is likely to open in 2015. (Helsingin Sanomat international edition 7 September 2012 accessed 28 September 2012, http://www.hs.fi/english/article/Ring+Rail+Line+to+Helsinki-Vantaa+Airport+will+be+delayed+by+at+least+six+months/1329104754175) The railway will connect two other lines running in a broadly northerly direction from the city, so it will be possible to serve the airport from both directions. It is the intention to run trains from city to city through the airport. ("Helsinki airport link" Railway Gazette International March 2008 p122)
Recommendations for priorities	The planned airport connection will give good services to the city and to the rest of the national network.

Airport	København Kastrup
Current status	<p>This airport has the highest rail access mode share in the world, at 53%. Since 1998 the airport has been served by the line running to the Øresund Fixed Link line: this connects it to both the city and to southern Sweden (See “Kastrup link takes shape” in International Railway Journal June 1998 p42). The latter has been served by Swedish high speed trains on the København – Stockholm/Oslo route – sometimes operated by the Swedish State Railways (SJ) and sometimes by the Linx consortium. See, for example, Railway Gazette International January 2005 p7, where the liquidation of Linx and its replacement as operator by SJ is discussed.</p> <p>The airport is also connected to the city by the automated metro, which opened in July 2007 (International Railway Journal July 2007 p13).</p>
TEN-T corridor	It is on the Scandinavia - Mediterranean Corridor.
Future plans	<p>A second metro line is planned (Tramways & Urban Transit December 2013 p524), this will run to the south of the city and connect with a north-south line in the south-western suburbs.</p> <p>Nothing specific is said in the documentation about the airport, although proposals under former Priority Project 20 for the new fixed crossing between Rødby and Puttgarden include construction of junctions in Kastrup. (http://tentea.ec.europa.eu/download/map_review/new_fiches/2007dk20070s_final.pdf accessed 29 November 2013)</p>
Recommendations for priorities	It is unlikely that more infrastructure for additional services is necessary.

Airport	Köln-Bonn
Current status	<p>The airport is on a loop off the Frankfurt – Köln high speed line, which opened in June 2004 (“Köln-Bonn News” 12 June 2004 (http://www.airport-cgn.de/mainpage.php?id id=134&kat=&land=1), accessed 7 July 2004). It is served by high speed and intercity trains as well as by suburban (S-Bahn) trains serving the conurbation.</p>
TEN-T corridor	The airport is on the Rhine – Alpine Corridor.
Future plans	Nothing specific is said in the documentation about the airport.
Recommendations for priorities	It is unlikely that more infrastructure for additional services is necessary.

Airport	Lisboa Portela
Current status	Portela airport has been on the Red Line of the city's metro since July 2012 (Tramways & Urban Transit September 2012). Plans for the extension had been delayed because of uncertainty about Portela's future: there have been plans for at least two sites for new airports to serve the city.
TEN-T corridor	It is on the Atlantic Corridor, on the line connecting Lisboa and Porto.
Future plans	Studies are ongoing into a high speed rail connection between the Lisboa and Porto.
Recommendations for priorities	Given the good air services from both Lisboa and Porto, it is unlikely that more infrastructure for additional services is necessary.

Airport	London Gatwick
Current status	<p>Gatwick Airport Station is on one of the busiest railway lines in Britain, that connecting London and Brighton. It is served by an Airport Express, the Gatwick Express, as well as by Southern and Thameslink regional and suburban trains. Thameslink trains connect Brighton in the south with Luton Airport and Bedford in the north, running through central London. Southern commuter services connect the airport to London and the south coast. There is a direct link to Reading. In the past, there have been direct local trains into Kent (Tonbridge) and long-distance trains to the Midlands and north of the country.</p> <p>Improvements to the station, including an additional platform, are currently under construction to improve passenger service and train reliability. Additional capacity in terms of train seats will be available on the Thameslink route after completion of major upgrades on this route.</p>
TEN-T corridor	<p>It is presumably on the North Sea - Mediterranean Corridor, but it is difficult to see exactly how. There are routes in that corridor from London to Dover and to Southampton, but Gatwick is not naturally on either of these.</p>
Future plans	<p>A further enlargement of the station is planned to facilitate the growth of rail services at the airport. The Government has also commissioned studies on the capacity of the line. See https://www.gov.uk/government/publications/national-infrastructure-plan-2013</p> <p>The UK Airports Commission has recommended a package of measures, including infrastructure enhancements, smart ticketing and rolling stock improvements.</p>
Recommendations for priorities	<p>Immediate priority should be given to returning the Gatwick Express to a dedicated express service, which can be achieved on completion of the current Thameslink and Gatwick Station upgrades. Further enhancement of the infrastructure would enable the growth of the airport in the longer term. It is not clear how the TEN-T Corridor will directly impact on this route.</p>

Airport	London Heathrow
Current status	Heathrow is the terminus of the Heathrow Express, a high speed dedicated Airport Express. Also operating on the same infrastructure is Heathrow Connect, a service calling at intermediate stations. The airport is also on the Piccadilly Line of the London Underground.
TEN-T corridor	It is on the North Sea - Mediterranean Corridor.
Future plans	<p>Construction is under way of Crossrail, a new east-west link across London which has Heathrow as one of the western termini. This will partly replace Heathrow Connect but will extend direct services through central London. The Piccadilly Line is also to be upgraded to provide additional capacity.</p> <p>There are also firm plans for a Western Access route, giving a direct connection to Reading, the West of England and South Wales. These routes are also to be electrified. Only electric trains can operate to Heathrow.</p> <p>The Airports Commission has recommended that, even with Heathrow's current capacity, plans should be brought forward for a Southern rail link.</p> <p>Heathrow may be linked by a spur to HS2, the planned high speed rail link to the West Midlands and the North, but planning of this link has been put on hold pending the outcome of the Airports Commission's work, which is considering the future of the airport.</p> <p>Cardiff – Bristol – London upgrading, including Crossrail, is mentioned in the supporting documents (although under the heading of 'other core network').</p>
Recommendations for priorities	<p>The Western Access route will enable rail connections to places (such as Bristol, Plymouth and Cardiff) currently served only by long-distance coach (or coach shuttle then rail). Nor are there air services to and from Heathrow, so this link would be valuable for regional rail-air connections.</p> <p>The Southern rail link would serve a very significant air passenger market in south west London and nearby counties, currently only accessible by road. This area is also home to many airport based employees.</p> <p>The HS2 spur would provide an alternative to road for air passengers from the Midlands and to connecting flights from further north. The costs of the spur are such that it is unlikely to be viable on the basis of the current throughput of air passengers, but may be justified on the basis of integrated through ticketing to connect with long haul flights.</p>

Airport	London Luton
Current status	Luton airport is served by a bus shuttle from Luton Airport Parkway station, which is on the Thameslink route and the Midland Main Line – both of which use much the same infrastructure. The former is a suburban line linking Bedford and Luton to the north of London with Gatwick and Brighton to the south. The latter is a secondary intercity route.
TEN-T corridor	The airport is likely to be on the North Sea - Mediterranean Corridor
Future plans	The Thameslink route is being upgraded significantly at the moment. The Midland Main Line is to be electrified under current government plans.
Recommendations for priorities	It is not obvious how the airport link would benefit from the TEN-T corridor. Some improvement to rail services will come from the current upgrades. Improving the shuttle connection between the station and the airport would probably achieve the most.

Airport	London Stansted
Current status	This airport is the terminus of two rail lines. The first runs north from London, and carries the Stansted Express, a mix of Airport Express and commuter train. The latter has a cross-country service to Peterborough and the Midlands.
TEN-T corridor	The airport is likely to be on the North Sea - Mediterranean Corridor
Future plans	It is not obvious how Stansted would benefit from the TEN-T corridor. The Airports Commission has recommended that consideration should be given to infrastructure improvements that would enable faster journey times, improved reliability and more London destinations.
Recommendations for priorities	The major infrastructure schemes are long term but would enable significant growth at the airport. Priority should be given to developing the schemes.

Airport	Lyon St-Exupéry
Current status	<p>Lyon is on the high speed line between Paris and the Mediterranean: the airport itself is on a loop which bypasses the city of Lyon to the west. Some 22 trains call there each day. However, rivalry between airlines and the high speed rail operator led to schedules which, for the air-rail passenger, were sub-optimal leading to low usage. The latest data to hand show that just 1.2% of air passengers used the TGV services (although this statistic pre-dates the start of the low cost OIUGO high speed service in 2013).</p> <p>A direct connection to the city is given by the RhôneExpress tram.</p>
TEN-T corridor	Lyon St-Exupéry is on the Mediterranean and North Sea - Mediterranean Corridors.
Future plans	<p>The Lyon – Torino part of the Mediterranean corridor has been highly controversial in Italy for environmental reasons, but it is understood that an acceptable route has been found.</p> <p>There are three mentions of Lyon in the documentation</p> <ul style="list-style-type: none"> • studies and works to relieve Lyon bottlenecks (includes the Lyon bypass route, former Priority Project 3, see http://tentea.ec.europa.eu/en/ten-t_projects/ten-t_projects_by_country/france/2011-fr-93047-s.htm accessed 2 December 2013) • upgrading Lyon – Avignon - Marseille • for the cross-border section of the Lyon – Torino connection, “works base tunnel; studies and works access routes”. (See http://ec.europa.eu/transport/themes/infrastructure/ten-t-implementation/priority-projects/doc/2012-2013/pp6-final_en.pdf accessed 29 November 2013) <p>Under the North Sea - Mediterranean Corridor heading, an eastern rail bypass is noted as being studied, as is upgrading of “Lyon – Avignon – Port de Marseille – Fos”.</p>
Recommendations for priorities	Enhancements which enable more high speed services at the airport should be supported.

Airport	Madrid Barajas
Current status	All four terminals of Barajas airport are served by line 8 of the city's metro, which opened in stages. In September 2011, suburban trains started to serve the station at the new Terminal 4. (See "Madrid Barajas airport rail link opens" in Railway Gazette International On-line 23 September 2011 accessed 3 October 2011)
TEN-T corridor	Madrid is on the Mediterranean and Atlantic Corridors.
Future plans	It is understood that high speed trains are also to serve the airport in the future, but a key piece of infrastructure in the north of the city has yet to be completed. (See "Madrid spreads its wings" in Railway Gazette International December 2011 p44) Nothing specific is said in the documentation about the airport.
Recommendations for priorities	Completion of the high speed infrastructure, so that high speed trains from all parts of the country could serve the airport, would be valuable. This would improve the quality of existing air-rail code-shares (which necessitate use of the metro or shuttle buses), and provide a more convenient interchange between train and plane for longer journeys.

Airport	Manchester
Current status	At the moment, this airport is well served by regional trains to the north and north-west of the country (including the city centre).
TEN-T corridor	This is on the North Sea - Mediterranean Corridor.
Future plans	A significant capacity increase (the Northern Hub, involving new infrastructure opening up new routes and providing new capacity) and an electrification scheme will result in a major improvement to services. (See "HLOS's main plans", Modern Railways August 2012 p10) The electrification project and the Northern Hub are mentioned in the documentation. The Metrolink light rail system is being extended to the airport. Phase 2 of HS2 will include a station just to the west of the airport: it is likely to be connected to the terminals by a people mover or an extension of Metrolink.
Recommendations for priorities	Current plans are valuable and should be fully supported.

Airport	Milano Linate
Current status	Linate is not currently rail connected.
TEN-T corridor	The airport is probably on the Mediterranean or Rhine – Alpine Corridor, although the documentation is unclear.
Future plans	<p>There are plans for a new line of the city’s metro which will connect it to the centre. Completion of this is expected in 2015. (See "LRT and light metro systems proliferate" by David Briginshaw in International Railway Journal December 2003 p44)</p> <p>Nothing specific is said in the documentation about the airport, and it is not clear how it could be connected.</p>
Recommendations for priorities	The metro extension will provide a city to airport link: it is unlikely that anything more is justified.

Airport	Milano Malpensa
Current status	The airport, 49km to the north of the city, is served by the Malpensa Express, a dedicated Airport Express connecting Terminal 1 at Malpensa with both Nord and Centrale stations in Milano. The airport was briefly (September 2010 – end 2011) served by high speed trains from the Italian high speed network; and during the Torino Winter Olympics in February 2006, by a direct service to Torino. (See Railway Gazette International October 2010 p11 and www.trenitalia.it/en/promozioni_offerte/promozioni/giochi_olimpici_main.html , printed 10 March 2006)
TEN-T corridor	The airport is probably on the Mediterranean or Rhine – Alpine Corridors.
Future plans	<p>There are plans for a connection to the north, in particular to provide a better link between the airport and Switzerland. There are also plans to extend the existing railway northwards to serve Terminal 2. (See http://tentea.ec.europa.eu/en/news_events/newsroom/malpensas_rail_link_benefits_from_eu_support.htm “Malpensa’s rail link benefits from EU support” 22 January 2013 accessed 28 January 2013.</p> <p>Nothing specific is said in the documentation about the airport, although under ‘Rhine – Alpine Corridor’ there is an entry saying, ‘Genova - Milano/Novara - CH border: Rail: studies; works starting before 2020’.</p>
Recommendations for priorities	<p>The northern connection, giving a better connection to Switzerland, and the T2 extension, would improve access to the airport considerably. These should be supported. A direct connection to Torino is possible today.</p> <p>The airport has been talking for some time about a connection to the cargo area: this too would be valuable.</p>

Airport	München
Current status	The airport is connected to the city by two S-Bahn lines. The multi-stop journey currently takes over 40 minutes.
TEN-T corridor	Munich is on the Scandinavian - Mediterranean Corridor.
Future plans	<p>Because of geographical and cost constraints, current aspirations seem to be to improve regional connections by a series of new spurs and links (see “Gutachten zur Flughafenbindung” (presentation on options for improving rail access to München airport). Bavarian Ministry for Industry, Infrastructure, Traffic and Technology 23 November 2009) and possibly to accelerate the city to airport journey by using limited-stop trains on one of the existing routes (“Doubling capacity across the city” by Murray Hughes in Railway Gazette International December 2011 p42).</p> <p>There are also plans in hand to connect the airport to the former TEN-T Priority Project 17, Railway axis Paris-Strasbourg-Stuttgart-Wien-Bratislava (See http://tentea.ec.europa.eu/en/news__events/newsroom/studies_for_new_munich_airport_rail_connection_receive_an_eu_grant.htm). This will require two sections of new railway, originally proposed as part of the regional connections referred to above. The 2012 and 2013 Annual Activity Reports of the Coordinator of Priority Project 17 provide details of the progress of these connections (“Annual Activity Report 2012-2013 for Priority Project 17 Railway axis Paris-Strasbourg-Stuttgart-Wien-Bratislava” by Péter Balázs, Brussels October 2013).</p> <p>Nothing specific is said in the documentation about the airport, and the latest report of the TEN-T Coordinator comments that, “In Munich an efficient integration of the airport into the national rail net is still not scheduled”. (See http://ec.europa.eu/transport/themes/infrastructure/ten-t-implementation/priority-projects/doc/2012-2013/pp17-final_en.pdf accessed 29 November 2013)</p>
Recommendations for priorities	Existing plans for regional and long-distance connections and a better journey between city and airport should be supported.

Airport	Nice Côte d'Azur
Current status	The airport is not directly served by rail at the moment, although it is a short walk from Nice St.-Augustin station.
TEN-T corridor	On the Mediterranean Corridor.
Future plans	There are long-standing plans to connect the airport to the city's tramway. A few years ago, there was also an aspiration for a TGV station near the airport, although this was thought to be some ten years into the future. (See "A reasonable future for Nice?" in Jane's Airport Review June 2010 p9) Nothing specific is said in the documentation about the airport.
Recommendations for priorities	It is unlikely that a TGV station could be justified, especially since plans for a high speed line east of Marseille (on which the station would presumably have been) appear to have been dropped. The planned tram link into the city centre will give a better connection to the national rail network.

Airport	Palma de Mallorca
Current status	Not currently rail connected
TEN-T corridor	Possibly on the Mediterranean Corridor, although since Mallorca is an island, the connection is tenuous.
Future plans	There are long-running plans for a tramway connecting the city and the airport. Nothing specific is said in the documentation about the airport.
Recommendations for priorities	The planned tram connection between airport and city is probably optimal.

Airport	Paris Roissy-Charles de Gaulle
Current status	As well as being the terminus of an RER suburban line from central Paris (and Orly airport), the airport has a station on the Grande Ceinture line around the north and east of Paris. This is used by long distance high speed trains (TGVs), and is the focus of an air-rail code share arrangement. One part of this is between Air France (AF) and French National Railways (SNCF) for AF passengers travelling to or from Brussels. The airline no longer flies that sector: instead, all of its passengers use the train. Another part is the tg'air code-share system, between SNCF and a number of airlines to and from around a dozen major destinations in France. More details of both of these can be found in IARO Report 11.08, "Case studies in cooperation between air and high speed rail", published in 2008.
TEN-T corridor	On the North Sea - Mediterranean and Atlantic Corridors.
Future plans	<p>There have been plans for a CDG Express non-stop dedicated service to the city centre: these are being revived⁷² (See "CDG Express : la taxe de 400 millions d'euros se confirme" by Valerie Collet http://www.lefigaro.fr/conjoncture/2013/08/19/20002-20130819ARTFIG00189-cdg-express-la-taxe-de-400millions-d-euros-se-confirme.php 19 August 2013 accessed 21 August 2013).</p> <p>The government has proposed better connections to Picardy in the past: some require more infrastructure than others, and their present status is uncertain.</p> <p>The documentation lists Calais – Paris rail: preliminary studies as a 'Project that could receive financing from the "Connecting Europe Facility (CEF)".' This project could improve connections to Charles de Gaulle Airport.</p>
Recommendations for priorities	The Airport Express proposal should have a high priority: the present RER service works, but is a commuter service with very high loadings in the peaks and not particularly suitable for air passengers.

Airport	Paris Orly
Current status	<p>This airport, to the south of the city, is loosely connected to the city by rail. For many years there has been an automated people mover, the VAL, between the airport and Antony station, on RER Line B to the city. This line continues through to Roissy-Charles de Gaulle airport.</p> <p>In November 2013 the north-south tramway T7 opened, serving Terminal Sud at the airport and connecting it to the Paris Metro at Villejuif.</p>
TEN-T corridor	The airport is on the Atlantic Corridor.
Future plans	<p>There are firm plans to extend Tramway T7 further south to Juvisy-sur-Orge RER station. (See “Paris opens suburban T7, with extension plan in place” in Tramways & Urban Transit December 2013 p501. See also “Paris Line T7 extension approved” by Keith Barrow. http://www.railjournal.com/index.php/light-rail/paris-line-t7-extension-approved.html?channel=526&utm_source=WhatCounts+Publicaster+Edition&utm_medium=email&utm_campaign=RGN+12.4.13&utm_content=Full+Article 3 December 2013 accessed 4 December 2013)</p> <p>There are proposals to build a TGV station to serve the airport as part of the improvements to the (incomplete) southern section of the Grande Ceinture orbital line: this might be either under or near the airport. (See “Le plan colossal d'Aéroports de Paris pour relooker Orly” by Fabrice Gliszczynski http://www.latribune.fr/entreprises-finance/services/transport-logistique/20121003trib000722588/le-plan-colossal-d-aeroports-de-paris-pour-relooker-orly-.html 3 October 2012 accessed 5 November 2012)</p> <p>The documentation lists the Southern High Speed Bypass as a “Project that could receive financing from the “Connecting Europe Facility (CEF)”: this is probably the project which would connect Orly to the high speed network.</p>
Recommendations for priorities	Improvements to the southern part of the Grande Ceinture are certainly necessary: in parts, speed restrictions are severe because of the alignment of this primarily freight route. While doing this, a TGV station serving the airport could be created in consultation with AdP. It is difficult to see how the connection to the city centre could be improved, but certainly a one-seat ride should be an aspiration.

Airport	Praha Ruzyne
Current status	The airport, to the west of the city, does not yet have a rail connection.
TEN-T corridor	The airport is on the Orient – East Mediterranean Corridor.
Future plans	<p>Two schemes have been under consideration. One is an extension of Line A of the city’s metro to the airport (See “Extending Prague’s metro line” by Radek Hončl in Eurotransport Volume 10 issue 6 2012), which is reasonably likely to be completed in the next few years. The other is a heavy rail connection, which is being studied by the Czech railway authorities (see, for example, http://www.praha-kladno.cz/). Target completion date is 2020. The most likely option is a spur from a nearby commuter line, the Kladno line, although an alternative is also under study (“Enhancing investments for a quality network” by Pavel Habarta in European Railway Review Issue 6 2011, p25). Both of these would necessitate a major upgrade.</p> <p>In the list of projects that could receive financing from the “Connecting Europe Facility (CEF)”, a rail connection to the airport is specifically mentioned.</p>
Recommendations for priorities	<p>The low-cost metro scheme would be quick to implement and would give a relatively low quality link, but would be valuable for airport based employees.</p> <p>The heavy rail connection being studied would be of higher quality and probably attract more passengers but at higher cost.</p>

Airport	Rīga
Current status	Not currently rail connected.
TEN-T corridor	On the North Sea – Baltic Corridor
Future plans	<p>A new rail connection to the airport is being built by the state railways. (See “Riga international airport – the air traffic hub of the Baltic region” by Krišjānis Peters in International Airport Review issue 3 2009 page 43)</p> <p>Within the corridor, Rail Baltica is a 1435mm gauge line connecting Tallinn and Riga to Kaunas and north-east Poland which could serve the airport. Historically, railways in the Baltic States have been built to the Russian gauge (1520mm).</p> <p>The list of projects that could receive financing from the “Connecting Europe Facility (CEF) includes “detailed studies for new UIC gauge fully interoperable line; works for new line to start before 2020; upgrading and new line on PL territory; rail – airports/ports interconnections, rail-road terminals”.</p>
Recommendations for priorities	The planned city connection and Rail Baltica links both have significant potential and should be supported.

Airport	Roma Fiumicino
Current status	The airport is the terminus of a line from the city. It has two types of service – the non-stop Leonardo Express from Termini station, and the slower suburban line serving other stations in the south and east of the city centre.
TEN-T corridor	On the Scandinavian - Mediterranean Corridor.
Future plans	<p>Plans for expansion of the airport include a new station on a different line, and an internal transit system. (“Will all routes lead to Rome?” by Günter Endres in Jane’s Airport Review June 2010 p13)</p> <p>Nothing specific is said in the documentation about the airport.</p>
Recommendations for priorities	The existing plans should be supported, and phased with developments at the airport.

Airport	Stockholm Arlanda
Current status	The airport has three stations. Two are served exclusively by the dedicated Airport Express, Arlanda Express, which runs non-stop to the city centre. The third is served by other trains. These include regional and commuter trains from south of Stockholm to cities north of the airport.
TEN-T corridor	Presumably on the Scandinavian - Mediterranean Corridor.
Future plans	There are plans for a light rail connection to the city. While the map in the documentation shows the Corridor as not going north of Stockholm, the list of projects that could receive financing from the "Connecting Europe Facility (CEF)" includes "Stockholm – Gävle – Sundsvall: rail works" under "Other core network". This could impact on Arlanda, whose aviation fuel is imported through Gävle and brought to the airport by rail.
Recommendations for priorities	Planned and projected connections to the city and nearby residential and industrial areas are probably adequate. No action needed.

Airport	Stuttgart
Current status	The airport is currently on the city's S-Bahn network.
TEN-T corridor	The airport is on the Rhine – Danube Corridor. Karlsruhe – Stuttgart – Munich is one of the projects in the list of projects that could receive financing from the "Connecting Europe Facility (CEF)" as "Studies and works ongoing".
Future plans	The controversial Stuttgart 21 plan (see "Major cost increase hits Stuttgart-21" in International Railway Journal September 2010 p10) would significantly improve connections by creating a new high speed link between city and airport (and beyond). The proposed routes are part of former Priority Project 17 (http://tentea.ec.europa.eu/download/map_review/new_fiches/2007de17200p_final.pdf accessed 29 November 2013). More details are given in the Annual Activity Reports of the Coordinator of Priority Project 17. (See "Annual Activity Report 2012-2013 for Priority Project 17 Railway axis Paris-Strasbourg-Stuttgart-Wien-Bratislava" by Péter Balázs, Brussels October 2013)
Recommendations for priorities	The high speed link between city and airport and its continuation to Ulm and München would be valuable and should be supported.

Airport	Warszawa
Current status	The airport has been connected to the city by two suburban services since December 2012. (See http://www.lotnisko-chopina.pl/en/passenger/access-and-car-parks/train accessed 19 June 2012)
TEN-T corridor	It is on the Baltic – Adriatic or North Sea – Baltic Corridor.
Future plans	Nothing specific is said in the documentation about the airport.
Recommendations for priorities	Connections to the city and nearby residential and industrial areas are probably adequate. No action needed.

Airport	Wien (Vienna) Schwechat
Current status	The airport has been on a suburban S-Bahn route for many years. More recently, it has been connected to the city by the CAT City Airport Train, a dedicated non-stop up-market Airport Express.
TEN-T corridor	The airport is on the Baltic – Adriatic and Rhine – Danube Corridors, both of which connect Vienna and Bratislava.
Future plans	<p>There are plans under former Priority Project 17 to connect the airport to Bratislava and Bratislava Airport by a high speed connection. (See http://tentea.ec.europa.eu/download/map_review/new_fiches/2007at17040p_final.pdf, accessed 29 November 2013). More details are given in the 2012 and 2013 Annual Activity Reports on that Priority Project (“Annual report of the coordinator Priority Project 17”, November 2012, “Annual Activity Report 2012-2013 for Priority Project 17 Railway axis Paris-Strasbourg-Stuttgart-Wien-Bratislava” by Péter Balázs, Brussels October 2013)</p> <p>On the list of projects that could receive financing from the “Connecting Europe Facility (CEF)”, there is specific mention in the Baltic – Adriatic section of rail “works, in particular cross-border sections PL-CZ, CZ-AT, PL-SK and SK-AT, Brno-Přerov line; (further) development of multimodal platforms and airport-rail interconnections”. This could impact on Wien airport. In the Rhine – Danube section, under Wien – Bratislava, Wien - Budapest and Bratislava – Budapest, there is also mention of “studies high speed rail (including the alignment of the connections between the three cities)”.</p>
Recommendations for priorities	A direct connection between Wien Airport and Bratislava would be valuable, also serving Bratislava Airport.

4. Conclusions

There have been numerous iterations of plans and projects under the TEN-T programme over the years since 1996¹⁶. While some progress has been made, results have generally been disappointing, and there have been periodic new initiatives from time to time to re-launch and re-focus the programme. How much will this review produce? It is certainly positive that the ten airport railway projects specifically mentioned are all quite imaginative and valuable for the future of the airports and their passengers, but more clarity on the other 28 would have been useful.

It was the intention that the Core Network would connect “38 key airports with rail connections into major cities” (see page 9). This presumably means establishing connections between airports and nearby major cities. However, there is also a comment that, “such airports shall be integrated into the high speed rail network wherever possible”¹⁷.

29 of the 38 airports already have a rail connection to the primary city they serve, and 8 of the remainder have firm plans. Only one has neither. While each of the airports has a catchment area stretching beyond the immediate city it serves, the main focus of each is the city itself. So a city centre connection is the obvious priority. 7 of the airports have a station on the high speed network, and there are plans for something similar at a further 7.

More clarity over priorities for connecting individual airports would be better, so IARO has put forward its own recommendations. These recommendations are based on the likely needs of each airport. For some, the present city to airport connection is all that is likely to be required. For others, there are developments planned which need supporting: these can be for new city centre links, for upgraded links to the catchment area outside of the main city served, or for infrastructure giving longer distance connections to the rest of the country.

The recommendations deal mainly with infrastructure. In some cases, the existing infrastructure will support an enhanced service pattern. This is noted in the boxes but it is understood that such enhancements are outside the scope of the TEN-T proposals.

IARO is clearly of the view that an air-rail link is valuable for a number of reasons, and it is therefore good to see explicit EU support and encouragement for this.

¹⁶ See http://ec.europa.eu/transport/themes/infrastructure/ten-t-policy/legal-basis/guidelines_en.htm

¹⁷ See Article 47(3) of COM(2011) 650, “Proposal for a Regulation of the European Parliament and of the Council on Union guidelines for the development of the Trans-European Transport Network” of 19 October 2011

Abbreviations and acronyms

AdP	Aéroports de Paris
AF	Air France
AT	Standard EU abbreviation for Austria
Bn	Billion (see note below)
CEF	Connecting Europe Facility
CH	Standard EU abbreviation for Switzerland
CZ	Standard EU abbreviation for the Czech Republic
EU	European Union
HS2	High Speed 2 – the code name for a future second high speed rail link in Great Britain, probably connecting London and the West Midlands (and probably beyond, to Leeds and Manchester)
IARO	International Air Rail Organisation
mm	millimetre
PL	Standard EU abbreviation for Poland
PPP	public-private partnership
RER	Réseau express régional (regional express network)
S-Bahn	Stadtschnellbahn - City fast train (German speaking countries). Suburban railway.
SJ	Statens Järnvägar (Swedish Railways)
SK	Standard EU abbreviation for Slovakia
SNCF	Société Nationale des Chemins de Fer Français (French National Railways)
TEN-T	Trans European Networks - Transport
TGV	Train à Grande Vitesse – French high speed train
Tgvair	Integrated air-rail code-shares using French Railways. Formerly known as TGV'Air
UIC	Union Internationale des Chemins de Fers (international railway union)
UK	United Kingdom
US or USA	United States of America
VAL	Véhicule automatique léger (light automatic vehicle)

Note that UK conventions are used for dates (day/month/year) and numbers (in 9,999.99 the comma , separates thousands: the full stop . is a decimal point). A billion is a thousand million, following US conventions.

There are occasions when the abbreviation UK (United Kingdom) is used for simplicity when the term Great Britain (the UK excluding Northern Ireland) would be more accurate.

IARO's Air/Rail conferences and workshops

Copies of the published reports of the earlier workshops and other research reports are available price £250 (free to IARO members). See www.iaro.com/publications.htm. Papers presented at more recent workshops are available on CD-ROM at the same price.

Workshops are very focused, dealing in detail with a restricted number of key issues, and complement the regular Air Rail Conferences. Workshops and conferences (with site visits) have been held as follows.

- 1993 - Zürich
- 1994 - Paris
- 1996 - London (Heathrow Express, Stansted Express)
- 1997 - Oslo (Airport Express Train)
- 1998 - Hong Kong (Airport Express Line)
 - Frankfurt (with the AIRail station and the Cargo Sprinter)
- 1999 - Workshop 1: Berlin (the Schönefeld link)
 - Copenhagen (the Øresund Link)
- 2000 - Workshop 2: Milan (Malpensa Express)
 - Paris (plans for CDG Express)
 - Washington (Baltimore-Washington International Airport)
- 2001 - Zürich airport: Air rail links - improving the partnership
 - Workshop 3: Madrid (and its airport rail links)
 - London Heathrow (Heathrow Express)
- 2002 - Workshop 4: Amsterdam, for railways serving airports but not as their main job - "Help - there's an airport on my railway".
 - New York (the Airtrain projects)
- 2003 - Workshop 5: Barcelona. Today's design and funding issues for airport railways
 - Frankfurt (The AIRail project)
 - Workshop 6: Newark. Practical air rail intermodality
- 2004 - Workshop 7: Oslo. Leisure passengers – a market for airport railways.
- 2004 - Brussels (Thalys:Air France code-share)
- 2005 - Chicago (Chicago's future in an era of successful air-rail intermodality)
 - Shanghai study tour
 - Workshop 8: Edinburgh. Security on airport railways.
- 2006 - Workshop 9: Baltimore (BWI). Security on airport railways.
 - Regional meeting 1: Stockholm
 - Workshop 10: Marketing and ticketing innovations (e-air-rail) Düsseldorf
 - Regional meeting 2: Kuala Lumpur
- 2007 - Los Angeles: Air/Rail East/West
 - Baltimore: The seamless journey
 - Vienna (Wien): Communications
- 2008 - October - London Gatwick. One-day conference on ticketing
- 2009 - June - Hamburg, with site visit to the new S-Bahn
 - October - Vancouver: light rail to airports
- 2010 - October - Lyon, with a site visit to the LesLYS express tram to the city
 - November/December - Far East study tour (with AREMA)
- 2011 - October - Venice
- 2012 - September - Berlin
- 2013 - July - Birmingham (high speed rail)
 - September - Gatwick (Branding)

Planned workshops and conferences

2014 – Brussels, Stockholm, London and Dallas

Details are available from IARO, or on www.iaro.com: you can sign up for details of future events in different parts of the world on www.iaro.com/events.htm

Future plans are, of course, subject to change.