UNITED NATIONS **E**

Economic and Social Council

Distr.
GENERAL

ECE/TRANS/WP.5/2006/2
6 July 2006

Original: ENGLISH

ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

Working Party on Transport Trends and Economics

Nineteenth session
Geneva, 14-15 September 2006
Item 2(b) of the provisional agenda

MONITORING OF DEVELOPMENTS RELEVANT FOR THE PAN-EUROPEAN TRANSPORT CORRIDORS AND AREAS

Infrastructure bottlenecks and missing links

Note by the secretariat

Introduction

1. At its eighteenth session (15-16 September 2005), the Working Party considered documents containing updated information on infrastructure bottlenecks and missing links on the AGR, AGC and AGN transport infrastructure networks. It was felt that bringing together this information, in particular from Central Asian and Caucasus countries, would greatly enhance the quality and the relevance of an updated final document, especially in view of its potential usefulness in the context of the further development of Pan-European and Euro-Asian transport links.

2. To date, the following countries have replied to the secretariat's request for information: Croatia, Estonia, Finland, Georgia, Germany, Hungary, Ireland, Kazakhstan, Kyrgyzstan, Lithuania, Netherlands, Poland, Romania, Sweden and Switzerland.

The present document gives the alignment or itinerary of the 10 Pan-European Corridors and lists which countries are traversed. It then lists the E Roads, E Railways or E Inland Waterways which follow the route of the Corridor concerned and the bottlenecks which have been reported by countries.

Countries are asked to check the E-roads and E-railways mentioned in the document because it is not always evident from studying maps of the networks and the lists of itineraries.

Definition of bottlenecks

As mentioned in the questionnaire, the following definitions of bottlenecks are used for roads, railways and inland waterways.

Roads

For road traffic, a quantifiable and practical bottleneck criterion is that of road capacity. It permits international comparisons of bottlenecks in various countries. For individual road categories, one may take the following capacities in terms of number of vehicles as the average daily traffic:

4-lane motorway	40,000 – 60,000 PCU/24 hours
roads of 3 lanes	15,000 – 20,000 PCU/24 hours
roads of 2 lanes	8,000 – 12,000 PCU/24 hours

In order to define a bottleneck, these limits should be exceeded on at least 80 to 120 days of the year. This insures that bottlenecks on roads in touristic areas, where high traffic volumes occur only at certain times of the year, are considered as well.

Railways

There are a great number of factors determining bottlenecks and it is practically impossible to concentrate all elements in a single bottleneck measure. Therefore, analysts selected the capacity of a line as a bottleneck criterion. In order to reach practical measures it appeared appropriate to take the following capacity limits:

single track main line	1 x 60 –80 trains/day
double track main line	2 x 100 – 200 trains/day

These values only represent commercial trains, i.e. movements of locomotives, service transport etc., are not included.

Inland waterways

Bottlenecks in the waterway network occur if:

- due to the cross section of the waterway or the dimension of locks the use is only limited (limited size of vessels, limitation of loading);

- unpredictable restrictions to the use occur due to the water-level and ice (for some waterways);

- the capacity of locks is insufficient.

The locks are the most relevant factor for the capacity of inland waterways.

Corridor I

Countries involved: Finland, Estonia, Latvia, Lithuania, Russian Federation, Poland
Via Baltica (road), Rail Baltica, road-rail

Alignment
Helsinki (Finland), Tallinn (Estonia), Riga (Latvia), Kaunus – Klaipeda (Latvia), Warsaw (Poland)

Branch A
Road Riga (Latvia) - Kaliningrad (Russian Federation) – Gdansk (Poland)
Rail Siauliai (Lithuania) - Kaliningrad (Russian Federation) – Gdansk (Poland)

E-roads
E-67 Helsinki – Warsaw), E-77 (Riga - Kaliningrad – Gdansk)
Missing link in AGR (Elblag – Kaliningrad)

E-rail
Missing link in AGC (Tallinn – Riga – border with Lithuania), E-75 (Sarkiai – Warsaw)
Missing link in AGC (Gdansk – Elblag – Kaliningrad - Siauliai
(NB Latvia acceded to AGC 05/06, Estonia is not a Contracting Party)

Bottlenecks

Road

No problem identified in Finland (TRANS/WP.5/2005/16)
No information for Estonia and Latvia

(Lithuania) Riga – Kaliningrad (construction of bypasses) (TRANS/WP.5/2005/16)

No information for the Russian Federation

(Poland) Radzymin – Wola Rasztowska, Wyszkow, Zambow, Choroszcz – Bialystok, Augustow (E 67), Rz. Nogat – Elblag/Ul. Nowodworska (E 77) (TRANS/WP.5/2005/16/Add.3).

Rail

No problem identified in Finland and Estonia (TRANS/WP.5/2005/16)

No information for Latvia
(Lithuania) State border with Poland – Kaunas, Kaunas – State border with Latvia (TRANS/WP.5/2005/16)
No information for the Russian Federation,
No problem identified in Poland (TRANS/WP.5/2005/16/Add.3).

Corridor II

Countries involved: Germany, Poland, Belarus, Russian Federation
Road /rail, mostly in parallel

Alignment

Berlin (Germany), Poznan-Warsaw (Poland), Brest-Minsk (Belarus), Smolensk-Moscow-Nizhniy Novgorod (Russian Federation)

E-roads
E-30 (Berlin – Moscow), E-22 (Moscow – Nizhniy Novgorod)

E-railways
E-20 (Berlin – Nizhniy Novgorod)

Bottlenecks

Road
No problem identified in Germany (TRANS/WP.5/2005/16/Add.5)
(Poland) Zakret-Minsk Maz., Broszkow-Siedlce, Swiecko-Tarnowo-Podgorne, Warsawa-Lowicz, Lowicz-Sochaczev, Konin-Krosniewice (E-30) (TRANS/WP.5/2005/16/Add.3),
No information for Belarus and for the Russian Federation

Rail
No problem identified in Germany (TRANS/WP.5/2005/16/Add.6)
(Poland) Swarzedz-Poznan Gorczyn (E-20) (TRANS/WP.5/2005/16/Add.3)
No information for Belarus, and for the Russian Federation

Corridor III

Countries involved: Germany, Poland, Ukraine

Road/rail, mostly in parallel

Alignment

Berlin and Dresden (Germany), Wroclaw-Katowice-Krakow (Poland), Lvov-Kiev (Ukraine)

Road branch from Berlin
Railway branch from Berlin

E-roads
E-36 (Berlin – Legnica), E-40 (Dresden – Kiev)

E-railways
E-55/E-61 (Berlin – Dresden), E-30 (Dresden – Kiev)

Bottlenecks

Road
No problem identified in Germany (TRANS/WP.5/2005/16/Add.5),
(Poland) Jaroslaw, Sedziszow Mlp-Kleczany, Debica-Lubzina, Tarnow-Machowa, Brzesko-Wojnicz, Wieliczka-Targowisko, Boleslawiec (E-40) (TRANS/WP.5/2005/16/Add.3),
No information for Ukraine

Rail
No problem identified in Germany (TRANS/WP.5/2005/16/Add.6),
(Poland) Opole Gl.-Wroclaw Gl.(E-30) (TRANS/WP.5/2005/16/Add.3),
No information for Ukraine

Corridor IV

Countries involved: Germany, Czech Republic, Austria, Slovakia, Hungary, Romania, Bulgaria, Greece, Turkey

EU – South-eastern Europe
Road/rail

Alignment
Dresden (Germany), Prague (Czech Republic), Bratislava (Slovakia)/Vienna (Austria), Budapest (Hungary), Arad (Romania)

Branch A from Nuremberg (Germany)
Branch B to Constanta (Romania)
Branch C to Istanbul (Turkey)
Branch D to Thessaloniki (Greece)

E-roads
E-55 (Dresden – Prague), E-65 (Prague – Bratislava), E-58 (Vienna – Bratislava), E-60 (Bratislava – Budapest), E-75 (Budapest – Szeged), E-68 (Szeged – Arad)
Branch A E-50 (Nürnberg – Prague)
Branch B E-671 (Arad – Oradea), E-60 (Oradea – Constanta)
Branch C E-75 (Budapest – Sofia – Istanbul)
Branch D E-79 (Sofia – Thessaloniki)

E-railways
E-61 (Dresden – Budapest), E-65 (Breclav – Vienna), E-56 (Budapest – Arad)

Branch A E-40 (Nurnberg – Prague)
Branch B E-54 (Arad – Bucharest), E-562 (Bucharest – Constanta)
Branch C E-66 (Arad – Belgrade), E-70 (Belgrade – Istanbul)
Branch D E-855 (Sofia – Thessaloniki)

Bottlenecks

Road
No problem identified in Germany (TRANS/WP.5/2005/16/Add.5),
No information for Austria, Czech Republic, Slovakia,
(Hungary) Budapest – Tatabanya, around Budapest, Budapest – Bicske, Kecskemet – Szeged (TRANS/WP.5/2005/16/Add.8)
City congestion in Romania,
No information for Bulgaria, Greece and Turkey

Rail
No problem identified in Germany (TRANS/WP.5/2005/16/Add.6),
No information for Austria, Czech Republic, and for Slovakia,
(Hungary) Budapest – Györ, Budapest – Cegled, Budapest, Rakos – Ujszasz – Szolnok (TRANS/WP.5/2005/16/Add.8)
No problem identified in Romania,
No information for Bulgaria, Greece and for Turkey

Corridor V

Countries involved: Italy, Slovenia, Croatia, Hungary, Slovakia, Ukraine, Bosnia and Herzegovina

Transport modes Road, rail, aviation, navigation

Alignment
Venice -Trieste – Ljubljana - Maribor – Cakovec - Budapest – Miskolc – Uzgorod – Lvov
Branch A Bratislava – Kosice – (Uzhgorod) – Lvov
Branch B (road) Rijeka – Zagreb – Cakovec
Branch B (rail) Rijeka – Zagreb – Koprivnica – Dombovar
Branch C Ploce – Mostar – Sarajevo – Osijek – Budapest

E-roads
E-70 (Venice – Ljubljana), E-57 (Ljubljana – Maribor – Graz), E-66/E-71 (Graz – Budapest – Miskolc), E-79/E-573 (Miskolc – Uzgorod), E-471 (Uzgorod – Lvov)
Branch A E-75 (Bratislava – Trencin), E-50 (Trencin – Kosice – Stryei),
E-471 (Stryei- Lvov)
Branch B E-65 (Rijeka – Zagreb – Cakovec)
Branch C E-73 (Mostar – Sarajevo – Budapest)

E-railways

E-70	(Venice – Ljubljana), E-69 (Ljubljana – Budapest), E-50 (Budapest – Miskolc – Lvov)
Branch A	E-63 (Bratislava – Zilina), E-40 (Zilina – Kosice – Lvov)
Branch B	E-71 (Rijeka – Zagreb – Dombovar)
Branch C	E-771 (Ploce – Sarajevo – Subotica), E-85 (Subotica – Budapest)

Road

No information for Austria, Italy, Slovakia and for Slovenia.

(Hungary) Székesfehérvar – Budapest, around Budapest, Budapest – Hatvan, Budapest – Martonsvasar, Balatonföldvar – Balatonszentgyörgy, Budapest – Aszod, Nyireghaza, Budapest – Pécs (TRANS/WP.5/2005/16/Add.8)
No information for Bosnia and Herzegovina, Slovakia, Ukraine
No problem indicated by Croatia

Rail

No information for Austria, Italy, Slovenia, Slovakia

(Hungary) Székesfehérvar – Budapest, Budapest – Hatvan (TRANS/WP.5/2005/16/Add.8)
No information for Slovakia, Ukraine
No problem indicated by Croatia
No information for Bosnia and Herzegovina

Corridor VI

Countries involved: Poland, Czech Republic, Slovakia

Transport modes Road, rail

Alignment

Gdansk - Grudziadz/Warsaw – Katowice – Zilina

Sub-alignment
Gdansk – Elblag – Warsaw - Piotrkow Trybunalski

Branch A to Poznan
Branch B to Brno

E-roads

E-77 (Gdansk – Warsaw), E –67 (Warsaw – Piotrkow Trybunalski), E-75 (Piotrkow Trybunalski – Katowice - Zilina)
E-75 (Gdansk – Lodz - Piotrkow Trybunalski)

Branch A	E-261 (Poznan – E-75)
Branch B	E-462 (Katowice – Brno)

E-railways
E-65 (Gdansk – Ostrava - Breclav), E-40 (Ostrava – Zilina)
Missing link in AGC (Gdansk – Bydgoszoz – Katowice)

Bottlenecks

Road
Nidzica – Mlawa, Glinojeck – Plonsk (E 77), Mzurki – Piotrow Trybunalski (E 67), Torun – Czerniewice, Wloclawek Kowal, Pogorze – Miedzyswiec, Leczyca – Ozorkov (E 75)(Poland) (TRANS/WP.5/2005/16Add.3)
No information from Czech Republic and from Slovakia

Rail
No problem identified in Poland (TRANS/WP.5/2005/16/Add.3)
No information from Czech Republic and from Slovakia

Corridor VII

Countries involved: Austria, Bulgaria, Croatia, Germany, Hungary, Moldova, Romania, Serbia and Montenegro, Slovakia, Ukraine

Transport mode: Inland waterway route on the Danube from Germany to the Black Sea; connects with the North Sea via the Rhine and the Main

Alignment

Kelheim (Germany), Austria, Bratislava (Slovakia), Györ-Gönyü (Hungary), Croatia, Serbia, Ruse-Lom (Bulgaria), Moldova, Ukraine, Constanta (Romania)

E waterways

E-80 River Danube from Kelheim to Sulina

E 80-05 Danube – Bucharest Canal
E 80-14 Danube – Black Sea Canal
E 80-14-01 Poarta Alba – Navodari Canal
E 80-09 Danube – Kilia Arm
E 80-16 Danube – St George Arm
Other branches to be identified and added.

Bottlenecks[1]

Use for transport is hindered at several points by bottlenecks caused by either insufficient width or depth. Work to eliminate bottlenecks is opposed by environmentalists.

[1] Information extracted from European Commission DG Energy and Transport "Pan-European Transport Corridors and Areas Status Report – Final Report", 24 November 2005.

Upper and middle Danube

Four sections with frequently unfavourable water depths:

Straubling – Vilshofen, 69 km (km 2,318-2,249)
Melk – Dürnstein, 30 km (km 2,038-2,008)
Vienna – Bratislava, 45 km (km 1,920-1.875)
Palkovicovo – Budapest, 165 km (km 1,811-1,646)

Downstream of Budapest

Conditions are substantially better. Unfavourable water levels occur 8-10 days per year at:
Hungarian section near Dunaujvaros (km 1,580)
Downstream from Dunaföldvar (km 1,547)
Near Vukovar (km 1,307)
Downstream from Iron Gates II hydro power station

Bottlenecks identified from country responses

No information from Austria and from Bulgaria.
(Croatia) Sava (E 80-12) from Croatian border to Sisak – upgrading from class III to class Vb is required. Missing link Danube – Sava Canal (E 80-10) from Vukovar to Samac
No problem identified by Germany
(Hungary) Improvement of the navigability on the Danube, new border port at Mohacs, new port basin at Baja (TRANS/WP.5/2005/16/Add.8)
No information from Moldova
(Romania) 863 km (Iron Gates II) –175 km (Braila) (depth insufficient 60-150 days per year)
No information from Serbia and Montenegro, from Slovakia and Ukraine.

Corridor VIII

Countries involved: Greece, FYR Macedonia, Bulgaria, Turkey, Albania, Italy

Transport modes Road, rail, maritime navigation, aviation

Alignment

Durres, Tirana (Albania), Skoje, Bitola (FYR Macedonia), Sofia, Dimitrovgrad, Burgas, Varna (Bulgaria)

E-roads
Missing link in AGR (Albania), NB Albania not Contracting Party to AGR
Missing link in AGR (Albania border to Ohrid)
E-65 (Ohrid – Skopje), E –871 (Skopje – Sofia), E-80 (Sofia – Popowica)
E-773 (Popowica – Burgas), E-87 (Burgas – Varna)
Branch E-83 (Sofia – Bjala)

E-railways
Missing link in AGC (Albania), NB Albania not Contracting Party to AGC
Missing link in AGC (Albania border – Skopje – Sofia)
E-70 (Sofia – Plovdiv), E-720 (Plovdiv – Burgas)
Branch E 680 (Sofia – Gorna - Varna).

Bottlenecks

Road
No information for Albania, Bulgaria, Greece, for FYR Macedonia, Italy and for Turkey

Rail
No information for Albania, Bulgaria, FYR Macedonia, Greece, Italy and for Turkey

Corridor IX

Countries involved: Finland, Russian Federation, Belarus, Ukraine, Moldova, Romania, Bulgaria, Greece, Lithuania

Transport modes Railway, road, aviation, navigation

Alignment

Helsinki – St. Petersburg –Pskov/Moscow – Kiev – Ljubasevka – Chisinau – Bucharest – Dimitrovgrad – Alexandroupolis

Branch A from Klaipeda
Branch B from Kaliningrad
Branch C to Odessa.

E-roads
E-18 (Helsinki – St. Petersburg), E-95 (St. Petersburg – Kiev), E-95 (Kiev – Odessa), E-584 (E-95 – Chisinau), E-581/E-85 (Chisinau – Bucharest), E-85 (Bucharest – Alexandroupolis)

Sub-alignment E-105 (St. Petersburg – Moscow), E-101 (Moscow – Kiev)

Branch A E-85 (Klaipeda – Vilnius), E-28 (Vilnius – Minsk), E-271 (Minsk – Gomel)
Branch B B E-28 (Kaliningrad – Vilnius)
Branch C E-95 (to Odessa).

E railways
E-10 (Helsinki – Moscow), E-95 (Moscow – Kiev), E-95 (Kiev – Chisinau), E-95 (Chisinau – Bucharest), E-95 (Bucharest – Dimitrovgrad)
Branch A Missing link in AGC
Branch B Missing link in AGC
Branch C Missing link in AGC

Bottlenecks

Road
(Finland), Helsinki – Russian border, City of Hamina, border crossing at Vaalimaa (E-18), it may take hours for heavy traffic to cross the border (TRANS/WP.5/2005/16).

No information for Russian Federation, Belarus, Ukraine, Moldova
(Romania) City congestion
No information for Bulgaria and Greece

(Lithuania) Southern by-pass of Vilnius between E 85 and E 28, Marijampolé – Kybartai (E 28) (TRANS/WP.5/2005/16).

Rail
(Finland) Kerava – Riihimäki, Lahti – Luumäki (TRANS/WP.5/2005/16)
No information for Belarus, Bulgaria, Greece, Moldova, Romania, Russian Federation and Ukraine.
(Lithuania) (Corridor IXB)Vilnius – Kaisiadorys, Radviliskis – Siauliai, Siauliai – Klaipeda, Kaisiadorys – Radviliskis, Kaisiadorys – Klaipeda, Kaisiadorys, - Siauliai, Palemonas – Gaiziunai, Radviliskis – Klaipeda

(Corridor IXD) Kaisiadorys – Kybartai, Vilnius – Kybartai, Kena – Kybartai

(Corridor IXB, IXD) Kena – Kybartai, Radviliskis – Siauliai (TRANS/WP.5/2005/16).

Corridor X

Countries involved: Austria, Slovenia, Croatia, Hungary, Serbia, Bulgaria, FYR Macedonia, Greece

Road/rail

Alignment
Salzburg – Ljubljana – Zagreb – Belgrade – Nis – Skopje – Veles – Thessaloniki

Branch A from Graz
Branch B from Budapest
Branch C to Sofia
Branch D to Florina (Via Egnatia).

E-roads
E-55 (Salzburg - Villach), E-61 (Villach - Ljubljana), E-70 (Ljubljana – Zagreb – Belgrade), E 75 (Belgrade – Nis – Skopje - Thessaloniki).

Branch A E 59 (Graz – Maribor – Zabgreb)
Branch B E 75 (Budapest – Belgrade)
Branch C E 80 (Nis - Sofia)

Branch D E 65 (Skopje – Florina).

E railways
E-55 (Salzburg – Villach), E 65 (Villach – Ljubljana), E 70 (Ljubljana – Zagreb – Belgrade), E 85 (Belgrade - Skopje – Thessaloniki).

Branch A E 67(Graz – Maribor – Zidani Most)
Branch B E 85 (Budapest – Belgrade)
Branch C E 70 (Nis - Sofia)
Branch D Missing link in AGC.

Bottlenecks

Road
No information for Austria, Bulgaria, FYR Macedonia, Greece, Slovenia, Serbia
No problem identified by Croatia and Hungary

Rail
No information for Austria, Slovenia, Serbia, Bulgaria, FYR Macedonia and Greece
No problems identified by Croatia and Hungary

_____