EXPERT MEETING ON TRANSPORT CONNECTIVITY AND LOGISTICS: EMERGING OPPORTUNITIES AND CHALLENGES FOR ENHANCING RAIL CONNECTIVITY ALONG THE TRANS-ASIAN RAILWAY NETWORK

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CLASSIFICATION OF TAR ROUTES

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1. PURPOSES OF CLASSIFICATION

Two main types of purposes of route classification:

1) Inventory and identification.
2) (Joint) development of corridors and regional cohesion.

No	Option	Usability / opportunities	Limitations	Use-cases
1.	INVENTORY	Identification of segments / routes and their key parameters. Suitable also for further joint corridor development purposes.	Usually considering one mode only. Not related to the development of economic corridors, though may be a basis.	OSJD railway corridors (including technical-operational passports)
2.	COORDINATION OF CONSTRUCTION AND DEVELOPMENT	Identification of potential routes, links and bottlenecks aimed at joint investment and action prioritizing.	Should be based on common vision / strategy.	European Agreement on Main International Railway Lines AGC TITR (Middle Corridor Association)
3.	COMBINED TRANSPORT AND ECONOMIC DEVELOPMENT	Identification of economic corridors and their transport backbones. Often multimodal.	Requires involvement of economic authorities.	CAREC, ECO, TRACECA
4.	DEVELOPMENT OF MULTIMODAL ROUTES	Identification of potential routes, links and bottlenecks considering multimodality. Consideration of synergy and competition of transport modes	Requires multi-sectoral agreements and often involvement of economic authorities.	CAREC, ECO, TRACECA

2. CRITERIA FOR CLASSIFICATION

No	Criteria	Usability	Constraints	Use-cases
1	Gauge	May be used as one of the parameters.	Applicable to segments rather than to corridors.	
2	Electrified or not	May be used as one of the parameters.	Applicable to segments rather than to corridors.	
3	No of tracks	May be used as one of the parameters.	Applicable to segments rather than to corridors.	
4	Mixed technical parameters	May be used as one of the characteristics.	A time-changing parameter that may require regular updates, applicable to segments, does not cover other aspects of corridors.	**European Agreement on Main International Railway Lines AGC**
5	Existing lines and new lines	May be used if development purposes are considered and there is a mutual consensus on the plans.	A time-changing parameter that may require regular or even annual updates.	**European Agreement on Main International Railway Lines AGC**
6	Types of lines: freight, passenger, mixed	May be used as one of the characteristics for segments.	Suitable for segments, but not for the whole corridors.	**European Agreement on Main International Railway Lines AGC**
7	Orientation	Helps distinguishing corridors without map.	Cannot always be clearly defined, the purpose of such criteria is not clear.	**European Agreement on Main International Railway Lines AGC**
8	Subregions / countries	Useful for segments.	Too complicated for corridors that pass through several countries.	**TRANS-ASIAN RAILWAY IN THE NORTH-SOUTH CORRIDOR NORTHERN EUROPE TO THE PERSIAN GULF (2001)**
9	Multimodal	One-mode corridors are less and less considered, as there is a paradigm shift to economic corridors.	It is not clear to which extent multimodality should be considered.	**European Agreement on Main International Railway Lines AGC (ferryboats only)**
10	Possible economic corridors	Holistic and economy-oriented approach.	Guessing and expert assumptions should be avoided, as they may never come true	**DEVELOPMENT OF THE TRANS-ASIAN RAILWAY TRANS-ASIAN RAILWAY IN THE SOUTHERN CORRIDOR OF ASIA-EUROPE ROUTES, 1999**
11	Geographic “natural breaks”	Considers natural formation of the corridors.	Based on general understanding and ‘naturally’ defined. Can lead to confusion when the same names (e.g. North - South) are used for different infrastructure in different countries. In addition, over time and as the number of stakeholders increases, corridors become "blurred" and each party considers the corridor upon its preferences	**TRANS-ASIAN RAILWAY IN THE NORTH-SOUTH CORRIDOR NORTHERN EUROPE TO THE PERSIAN GULF (2001). Financing, Planning and Programming of Transnational Transport Corridors: UNESCAP Study on Eurasian Transport Corridors (2018, 11th Meeting of the COMCEC Transport and Communications Working Group)**
12	Geographic “natural breaks” + multiple alignments	Avoids segmentation by considering less trunk arteries with serving capillaries.	Blurred understanding of corridors and becomes highly sophisticated	**COMPREHENSIVE PLANNING OF EURASIAN TRANSPORT CORRIDORS TO STRENGTHEN THE INTRA- AND INTER-REGIONAL TRANSPORT CONNECTIVITY (2007)**

3. SUGGESTED APPROACH

Considering important number of international classifications of corridors already causing a confusion in naming and routing, it is suggested that TAR classification would serve the following purposes:

- follow up on the *TAR Agreement as a practical and useable tool*,
- *clearly identify the segments and the stations* indicated in the TAR Agreement by countries and parameters,
- unambiguously identify and describe routes and corridors that pass through several countries *without the use of proper names and conventional geographical names*,
- be a basis for further actions, such as analysis of connectivity profiles between subregions and/or countries.

4. PROPOSED METHODOLOGY

The proposed classification is not aimed at naming corridors, but it can be used to (1) identify the exact links, (2)to rapidly understand the parameters of each links and/or corridors, (3) to establish connectivity profiles.

It is linked to the TAR Agreement and should be updated correspondingly.

1. **Inventory classification by routes:**
   a. According to the routes indicated in the Agreement.
   b. Country-wise
   c. Number + parameters.
   d. Inventory by lines: country abbreviation – line number (segment number) – track gauge – electrification – number of tracks.
   e. Inventory by stations: country abbreviation – line number – station number – special attributes (junction, border crossing point, ferry link).
   f. Allows construction of connectivity profiles (may later on be contributed with tariffs or any other parameter by segments).
2. **Corridor classification:**
   a. Names by countries
   b. Breakdown by lines and segments
   c. Allows construction of connectivity profiles and assessment of technical uniformity (may later on be contributed with tariffs or any other parameter by segments).

5. Examples. National

Country-wise segments

Country abbreviation	Line No	Segment No	Gauge	Electrification	Track
AZ	I	(1)	4	E	2

Country-wise stations

Country abbreviation	Line No	Station No	Type
AZ	I	S1	J

Station types

Abbreviation	Type
BCP	Border crossing point
J	Junction
F	Ferry link
M	Maritime connection

Line profile

Line: AZ-I		Name: Yalama – Beyouk Kesik						Mainline parameters: 4-E-2				
AZ-I-S1-BCP	**AZ-I-1-4-E-2**	AZ-I-S2-F, BCP	**AZ-I-2-4-E-2**	AZ-I-S3-J	**AZ-I-3-4-E-2**	AZ-I-S4-J	**AZ-I-4-4-E-2**	AZ-I-S5-BCP				
					AZ-I-5-4-E-1	AZ-I-S6-J	**AZ-I-6-4-NE-?**					
							AZ-I-7-4-NE-?	AZ-I-S7-BCP	**AZ-I-8-4-NE-1**	AZ-I-S8	**AZ-I-9-4-NE-1**	AZ-I-S9-BCP

5. EXAMPLES. CORRIDOR INVENTORY

Kazakhstan – Azerbaijan: Dostyk - Beyouk Kesik			
Corridor	**KZ-I – AZ-I**	**Parameters**	**4-M-M**
KZ-I		AZ-I	
Segment 1	Segment N	Segment 1	Segment N
Parameters	Parameters	Parameters	Parameters

The approach allows understating of the level of uniformity of a corridor (e.g. mixed gauges and electrification result in lower harmonization, the exact problematic segments can then be defined and the variety of such parameters may serve as basis to measure the level of uniformity).

5. Examples. Classification approach to form connectivity profiles and identify physical and non-physical barriers for operationalization of SEA – NCA links

The classification by itself can be used to form connectivity profiles and to identify possible barriers, such as:

- breaks of gauge resulting in delays at border crossings,
- changes in electrification along the line resulting in necessity to change locomotives,
- non-electrified segments resulting in lower speeds and lower sustainability,
- one-track segments predefining lower capacities,
- changes in number of tracks that may result in bottlenecks along the route.

5. Examples. Classification approach to form connectivity profiles and identify physical and non-physical barriers for operationalization of SEA – NCA links

Malaysia	MA-I							
Segments	MA-I-8-1-E-1	MA-I-7-1-NE-1	MA-I-6-1-NE-1	MA-I-5-1-E-2	MA-I-4-1-E-2	MA-I-3-1-E-2	MA-I-2-1-E-1	MA-I-1-1-E-1
Gauge	1000	1000	1000	1000	1000	1000	1000	1000
Electrification	+	-	-	+	+	+	+	+
Tracks (one or several)	1	1	1	2+	2+	2+	1	1
Thailand	TH-I							
Segments	TH-I-7-1-NE-1	TH-I-6-1-NE-1	TH-I-5-1-NE-1	TH-I-4-1-NE-1	TH-I-3-1-NE-1	TH-I-2-1-NE-1	TH-I-1-1-NE-1	
Gauge	1000	1000	1000	1000	1000	1000	1000	
Electrification	-	-	-	-	-	-	-	
Tracks (one or several)	1	1	1	1	1	1	1	
				Brake of gauge				
Lao PDR	LA-III							
Segments	LA-III-2-3-E-1	LA-III-I-3-E-1						
Gauge	1435	1435						
Electrification	+	+						
Tracks (one or several)	1	1						
China	CH-I							
Segments	CN-I-15-3-E-1	CN-I-10-3-E-1	CN-I-4-3-E-2	CN-I-3-3-E-2	CN-I-2-3-E-2	CN-I-1-3-E-2		
Gauge	1435	1435	1435	1435	1435	1435		
Electrification	+	+	+	+	+	+		
Tracks (one or several)	1	1	2+	2+	2+	2+		
				Brake of gauge				
Kazakhstan	KZ-I							
Segments	KZ-I-6-4-NE-1	KZ-I-5-4-NE-1	KZ-I-4-4-E-2	KZ-I-3-4-E-2				
Gauge	1520	1520	1520	1520				
Electrification	-	-	+	+				
Tracks (one or several)	1	1	2+	2+				

Possible bottlenecks, delays, lack of capacities

5. EXAMPLES. CLASSIFICATION OF TAR CORRIDORS

The basis for classification are:

1) Ocean to ocean corridors or potential corridors for East – West connections.
2) Inland to ocean corridors for North – South connections.
3) Numbering from North to South for East-West links and from West to East for North-South links (in case of new corridors in the future – by year of inclusion in classification).
4) Link to previously defined Euro-Asian rail transport linkages (EATL: Route 8 was excluded and replaced by internationally acknowledged Middle Corridor).

5. Examples. Classification of TAR corridors

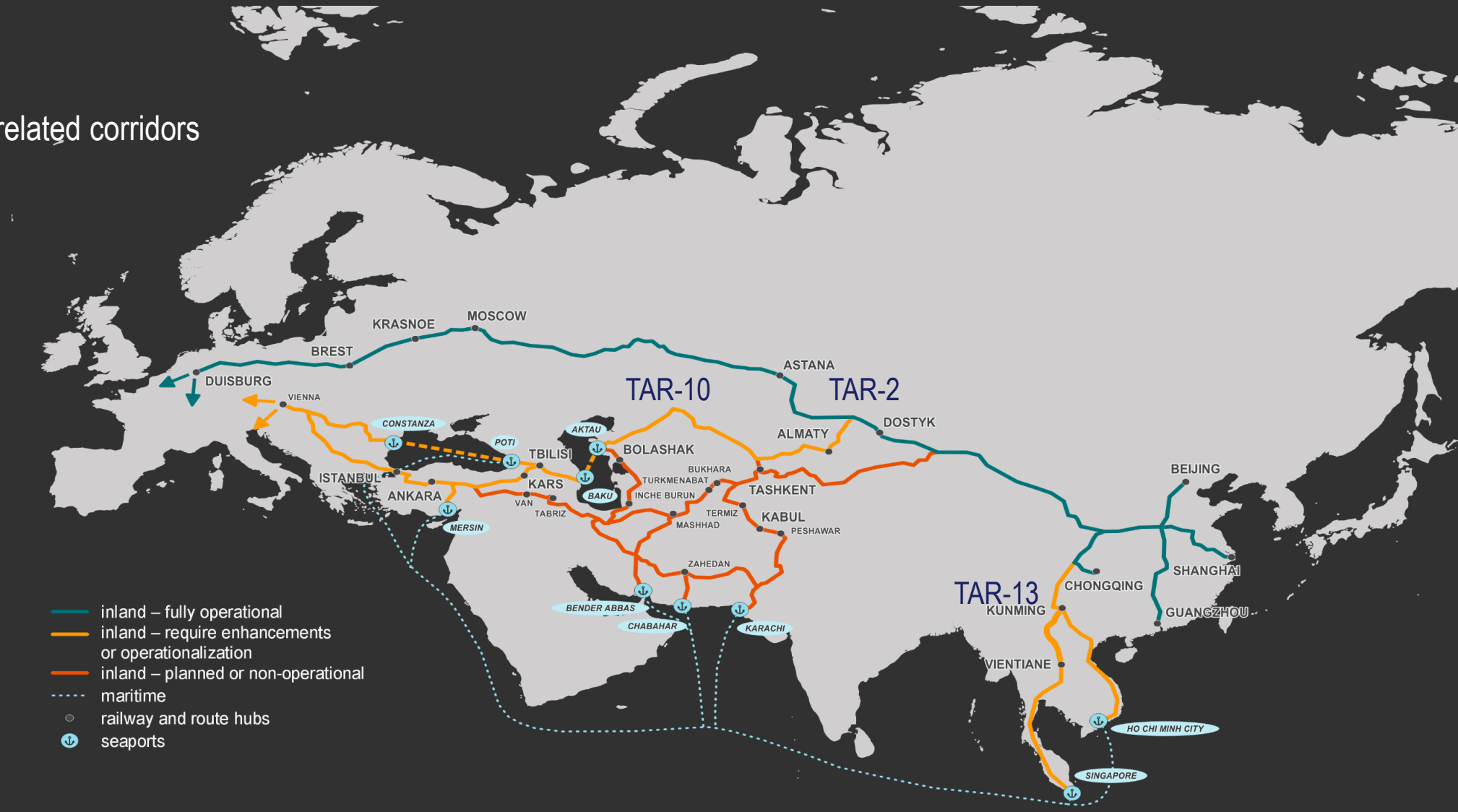
No	Abbreviation	Description	EATL route
1	TAR-1	**The Trans-Siberian route**. From the Russian Pacific port of Nakhodka and the Russian-Chinese border to the eastern borders of the EU (Finland, Hungary, Poland, Lithuania)	Route 1
2	TAR-2	**China – Kazakhstan – Russian Federation – Belarus / Ukraine.** From the ports of Lianyungang and Shanghai through Eastern China, Kazakhstan, Russian Federation, Belarus or Ukraine to the eastern borders of the EU.	Route 2
3	TAR-3	from the Lianyungang and Shanghai ports to the south-eastern EU border (Hungary-Romania)	Route 3
4	TAR-4	**Southern Corridor.** an alternative link between Lianyungang and Shanghai ports and South-Eastern Europe, passing through Kazakhstan, Uzbekistan, I.R.Iran, Türkiye, Bulgaria.	Route 4
5	TAR-5	**North-South International Transport Corridor mainline.** From Northern Europe to I.R. Iran , extending from the Finnish-Russian border southward to the Caspian Sea and terminating at the port of Bandar Abbas in the Persian Golf	Route 5
6	TAR-6	From the port of Vladivostok in the Russian Federation though Kazakhstan to the Ukraine, Hungary, Poland	Route 6

5. Examples. Classification of TAR corridors

No	Abbreviation	Description	EATL route
7	TAR-7	A connection between the Lianyungang and Shanghai ports and the EU, passing through the territory of China, Uzbekistan, Kazakhstan, Russian Federation, Ukraine	Route 7
8	TAR-8	**North-South International Transport Corridor West line.** From Northern Europe to I.R. Iran through Azerbaijan	-
9	TAR-9	**North-South International Transport Corridor East line.** Kazakhstan – Turkmenistan – I.R.Iran	-
10	TAR-10	**Middle Corridor**. Lianyungang and Shanghai ports – Kazakhstan – Caspian Sea – Azerbaijan – Georgia – Türkiye – Romania	-
11	TAR-11	Northern Europe through the Russian Federation to Central Asia (Kazakhstan, Uzbekistan and Tajikistan)	Route 9
12	TAR-12	Russian Federation – Mongolia – China (CMR corridor)	-
13	TAR-13 (a, b, c)	SKL corridor Kunming – Singapore connection a) Through Myanmar b) Through Lao PDR c) Through Viet Nam	-

5. EXAMPLES. CLASSIFICATION OF TAR CORRIDORS

Example of SEA – NCA related corridors



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Thank you for attention!

Contacts

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