INTEROPERABILITY OF TRUCK TOLL COLLECTION SYSTEMS ON ORIENT/EAST-MEDITERRANEAN CORE NETWORK CORRIDOR

Dr András TIMÁR Ph.D, D.Sc.

Professor Emeritus, University of Pécs

TEN-T ORIENT/EAST-MEDITERRANEAN CNC

- **The Orient/East-Mediterranean Core Network Corridor (OEM CNC) is a long North West – South Eastern transport corridor in the Trans-European Network of the European Union, which connects Central & Eastern Europe with the maritime interfaces of the North, Baltic, Black and Mediterranean seas**
- **It runs across 9 Member States: Germany, Austria, Czech Republic, Slovak Republic, Hungary, Romania, Bulgaria, Greece and Cyprus**
- **It comprises rail, road, airports, maritime and river ports, rail-road terminals and the Elbe river inland waterway**

MAP OF TEN-T OEM CNC

Source: OEM Work Plan, 2015

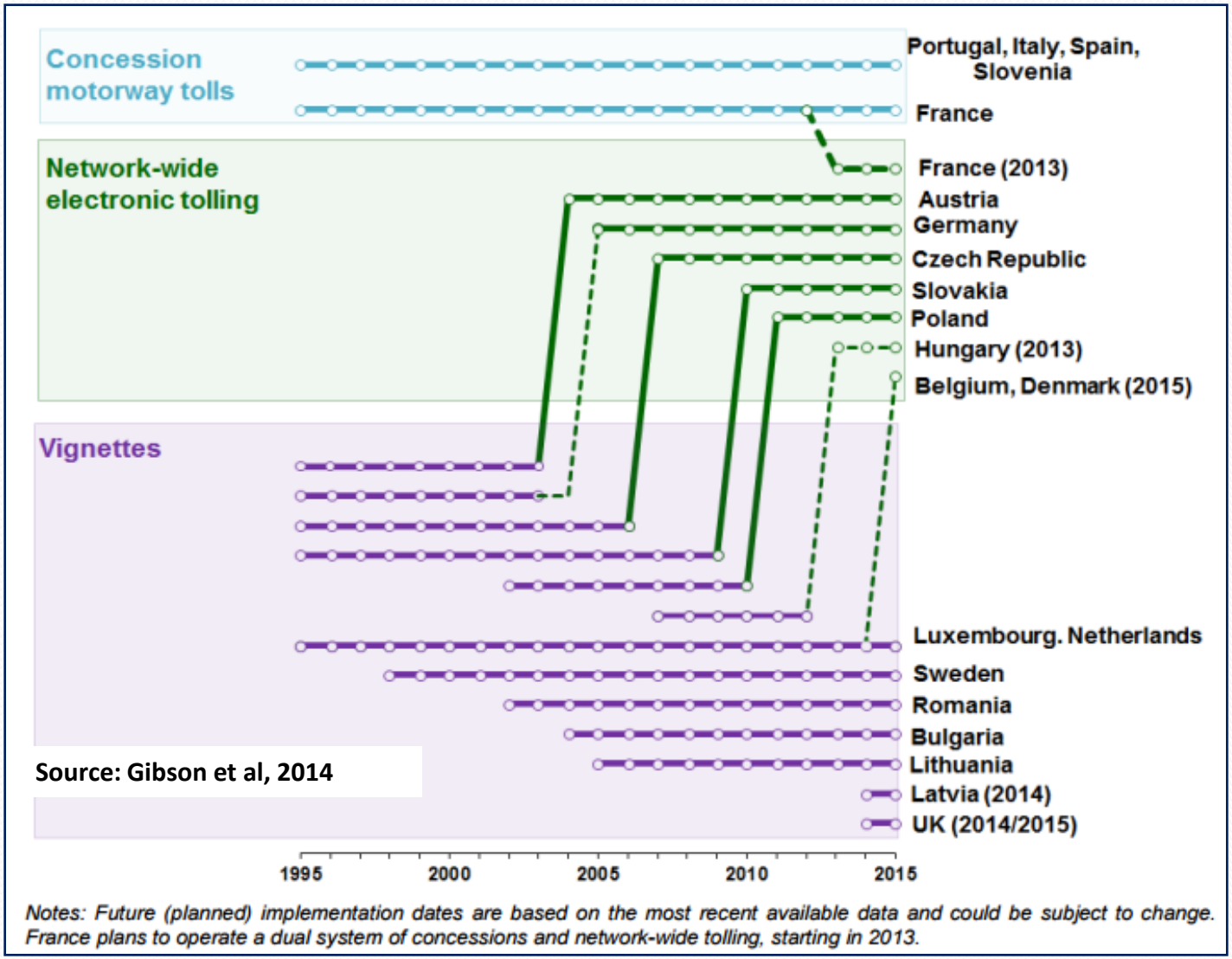
ROAD SECTIONS & TRAFFIC ON OEM CNC

- **The road infrastructure covers all nine Member States with a total length of 5 644 km**
- **Overwhelming majority of the road sections was built as motorways or expressways (82%), which are currently tolled**
- **The weighted annual average daily traffic (AADT) of goods vehicles per OEM corridor road sections was about 3 150 vehicles/day while that of passenger cars was 19 000 vehicles/day in 2014**
- **The overall average capacity utilization ratio for the OEM corridor road sections, for which data are available (year 2014), is about 44.5%**

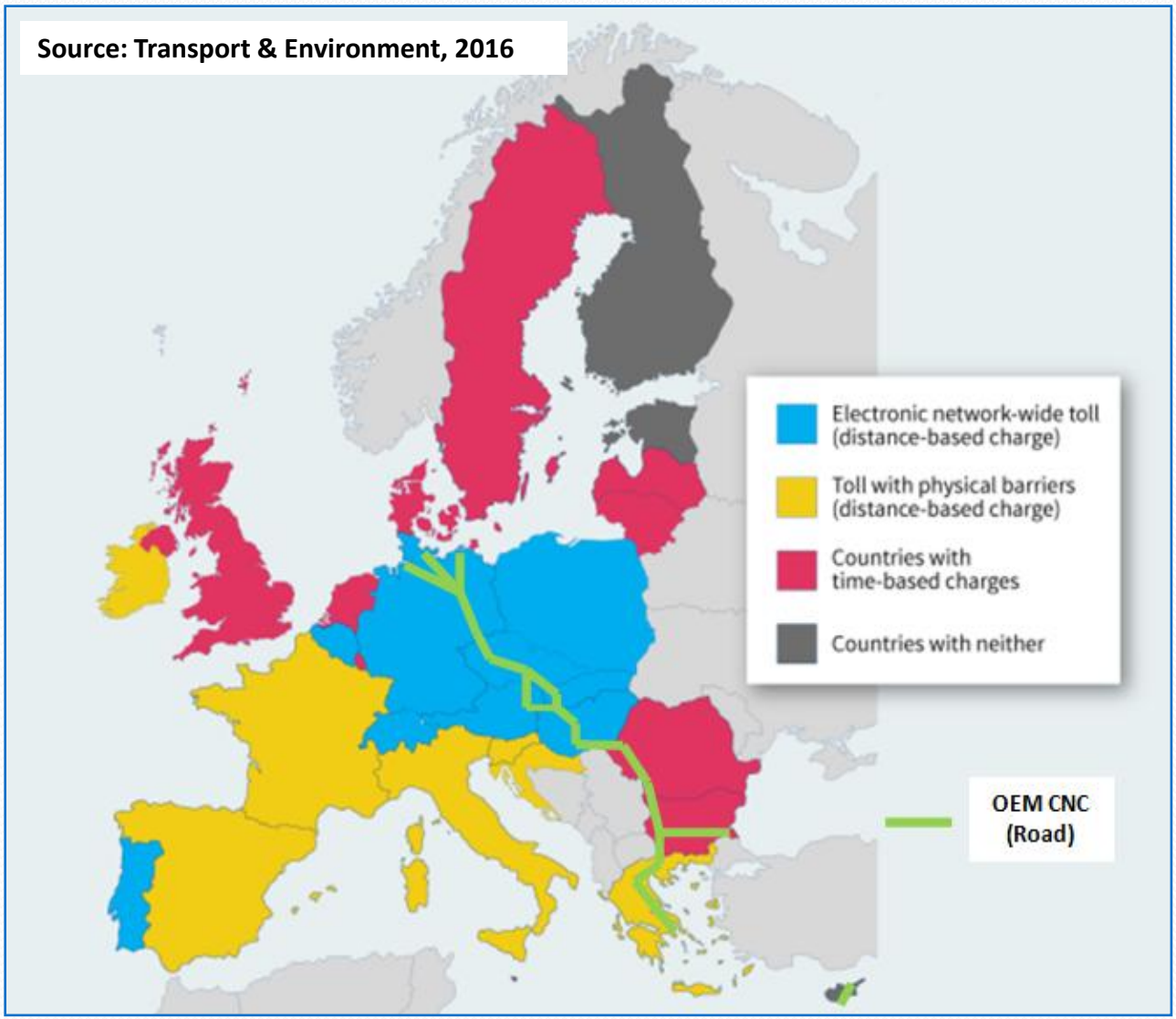
TOLL COLLECTION ON ROADS OF OEM CNC

- **Road user charging systems are in force in all OEM countries but Cyprus, five of which are Electronic Toll Collection (ETC) systems collecting distance based tolls levied on trucks (weight exceeding 3.5 tons), two operate time-based toll collection (vignette) systems, while in Greece distance based tolls are to be paid at toll stations (some has already ETC lanes too)**
- **There is a trend towards greater use of ETCs across Europe: several countries that started with time based toll collection (vignette) systems have gradually transitioned to network-wide ETCs**
- **The EU Regulation No.1315/2013 sets up requirements for interoperability of the ETCs, so harmonization of user charging and toll collection systems is needed**

DEVELOPMENT OF TOLL COLLECTION



OEM TRUCK TOLL COLLECTION SYSTEMS



TRAFFIC & TOLL REVENUES IN 5 OEM-MS

OEM MEMBER STATE	Length of tolled network (km) in 2015	Average Daily Traffic (ADT; vehicle/day) in 2015		Toll revenues (€ million) in 2015
		Light vehicle (<3.5t)	Heavy vehicle (3.5t<)	
Austria	2 199	33 377	4 123	1 859.00
Czech Republic	1 433	-	4 466	360.15
Germany	15 252	-	6 065	4 370.00
Hungary	1 180	18 725	4 805	677.60
Slovak Republic	700	17 587	5 326	119.60

ITC'S INTER-OPERABILITY

- **Directive 2004/53/EC lays down the conditions for the inter-operability of ETC systems in the EU**
- **The truck toll related ETC systems in operation meet the requirements of Directive 2010/40/EU on the framework for the deployment of ITSs, but do not provide for seamless trans-border traffic, with the exception of partial cooperation between Germany and Austria**
- **To meet EU objectives, a priority should be given to achieve inter-operability of goods traffic related ETCs along the OEM CNC and to harmonize toll rates and differentiation**

TOLL RATES & DIFFERENTIATION

- **Czech Republic and Slovak Republic do not recover full infrastructure costs from road charging, due to the lack of approved methods to relate charges objectively to costs**
- **Truck tolls in Germany, Austria and Hungary are reflecting charges to recover investment and operating costs across the entire tolled network**
- **Most OEM countries (except Romania) apply charge differentiation by EURO emission classification at levels significantly below the maximum (100%) permitted by Directive 2006/38/EC**

TRUCK TOLL RATES & DIFFERENTIATION 1

Toll motor-ways & expres sways	Number of axles	Toll rate (€cent/veh-km)						Ratio to smallest value (differen-tiation within emission class)	Ratio to smallest value (overall differentiation)					
		F EURO 0-I	E EURO II	D EURO III	C EURO IV	B EURO V	A EURO VI		F EURO 0-I	E EURO II	D EURO III	C EURO IV	B EURO V	A EURO VI
DE	2	16.4	15.4	14.4	11.3	10.2	8.1	1.00	2.02	1.90	1.78	1.40	1.26	1.00
	3	19.6	18.6	17.6	14.5	13.4	11.3	1.20(F)-1.40(A)	2.42	2.30	2.17	1.80	1.65	1.40
	4	20.0	19.0	18.0	14.9	13.8	11.7	1.22(F)-1.44(A)	2.47	2.35	2.22	1.84	1.70	1.44
	5≤	21.8	20.8	19.8	16.7	15.6	13.5	1.33(F)-1.67(A)	2.70	2.57	2.44	2.06	1.93	1.67

Tolled motor-ways & expresss-ways	Num-ber of axles	Toll rate (CZK/veh-km) (1 € = 27.02 CZK; 1 CZK = 0.037€)				Ratio to smallest value (differen-tiation within emission class)	Ratio to smallest value (overall differentiation)			
		EURO 0-II	EURO III-IV	EURO V	EURO VI-EEV		EURO 0-II	EURO III-IV	EURO V	EURO VI-EEV
CZ	2	3.34	2.82	1.83	1.67	1.00	2.00	1.69	1.10	1.00
	3	5.70	4.81	3.13	2.85	1.71	3.41	2.88	1.87	1.71
	4≤	8.24	6.97	4.52	4.12	2.47	4.93	4.17	2.71	2.47

TRUCK TOLL RATES & DIFFERENTIATION 2

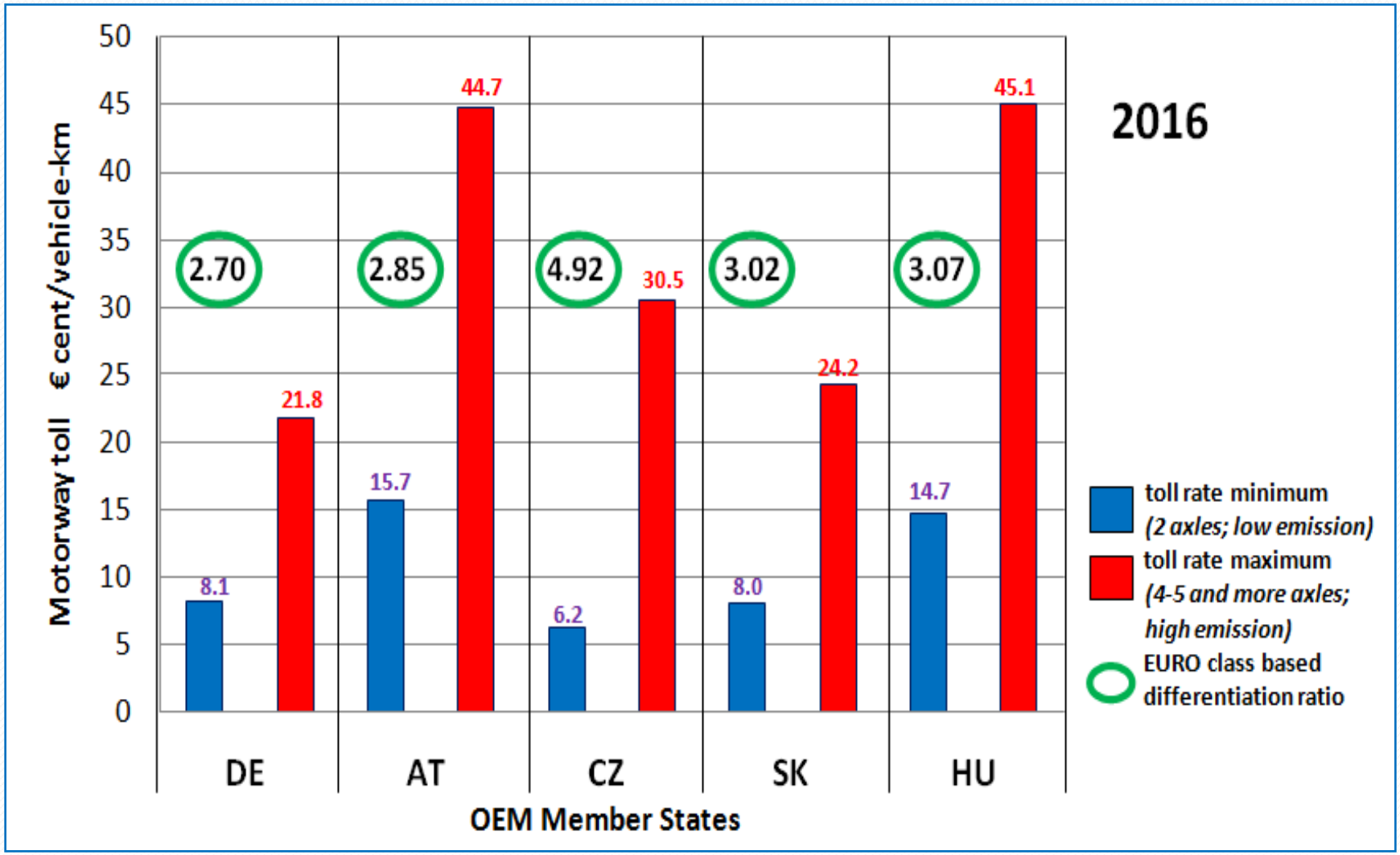
Tolled motorways & express-ways	Num-ber of axles	Net toll rate (€/veh-km)				Ratio to smallest value (differentiation) within emission class)	Ratio to smallest value (overall differentiation)			
		D EURO 0-III	C EURO IV-V	B EURO EEV	A EURO VI		D EURO 0-III	C EURO IV-V	B EURO EEV	A EURO VI
AT	2	0.2130	0.1900	0.1720	0.1570	1.00	1.36	1.21	1.10	1.00
	3	0.2982	0.2660	0.2408	0.2198	1.40	1.90	1.70	1.50	1.40
	4≤	0.4473	0.3990	0.3612	0.3297	2.10	2.85	2.54	2.30	2.10

Tolled motor-ways & express-ways	Vehicle category	Toll rate (€/veh-km)			Ratio to smallest value (differentiation within emission class)	Ratio to smallest value (overall differentiation)		
		EURO 0-II	EURO III-IV	EURO V-VI, EEV		EURO 0-II	EURO III-IV	EURO V-VI, EEV
SK	3.5t – 12t	0.103	0.093	0.080	1.00	1.29	1.16	1.00
	12t ≤ 2 axles	0.221	0.200	0.172	2.15	2.76	2.5	2.15
	12t ≤ 3 axles	0.233	0.211	0.181	2.26	2.91	2.64	2.26
	12t ≤ 4 axles	0.242	0.219	0.188	2.35	3.0	2.74	2.35
	12t ≤ 5 axles	0.233	0.211	0.181	2.26	2.91	2.64	2.26

TRUCK TOLL RATES & DIFFERENTIATION 3

Tolled motorways and expressways	Vehicle category	Gross toll rate (including VAT) (HUF/veh-km) 1 € = 305 HUF 1 HUF = 0.0033 &			Ratio to smallest value (differentiation within emission class)	Ratio to smallest value (overall differentiation)		
		EURO 0-I	EURO II	EURO III-IV		EURO 0-I	EURO II	EURO III-IV
HU	2 axles)	60.26	52.50	44.54	1.0	1.36	1.22	1.0
	3 axles)	84.55	73.52	62.49	1.4	1.94	1.65	1.40
	4≤ axles)	136.56	113.8	91.04	2.04-2.27	3.07	2.56	2.04

TRUCK TOLL RATES & DIFFERENTIATION 4



TOLL DIFFERENTIATION IS INCONSISTENT

- **Differentiation according to time of travel is applied only in the Czech Republic on the entire tolled network, while Austria applies higher charges at night to control noise emissions**
- **The range of truck toll rate differentiation applied currently in OEM countries is between 170% (DE) and 400% (CZ), while in other countries (AT, HU, SK) is close to 200%**
- **The international comparison of EURO emission class based differentiation could not be effective as a steering instrument toward modernization of the vehicle fleet, because international haulers are receiving highly inconsistent price signals**

COMPARISON OF TOLL DIFFERENTIATION

COUNTRY		DE				AT			CZ			SK					HU			BG	
																				vignette	
Vehicle category		2 axles	3 axles	4 axles	5≤ axles	2 axles	3 axles	4≤ axles	2 axles	3 axles	4≤ axles	3.5t – 12t	12t ≤ 2 axles	12t ≤ 3 axles	12t ≤ 4 axles	12t ≤ 5 axles	2 axles	3 axles	4≤ axles	3.5t < ≤12t	12t <
Emission class	EURO VI	1.00	1.40	1.44	1.67	1.00	1.40	2.10	1.00	1.70	2.50	1.00	2.15	2.26	2.35	2.26	1.00	1.40	2.04	1.00	1.30
	EEV					1.10	1.50	2.30													
	EURO V	1.26	1.65	1.70	1.93	1.21	1.70	2.54	1.10	1.90	1.70										
	EURO IV	1.40	1.80	1.84	2.06				1.70	2.90	4.20	1.16	2.50	2.64	2.74	2.64					
	EUROI II	1.78	2.17	2.22	2.44	1.34	1.90	2.85													
	EURO II	1.90	2.30	2.35	2.57				2.00	3.40	5.0	1.29	2.76	2.91	3.00	2.91	1.22	1.65	2.56	1.30	2.15
	EURO I	2.02	2.42	2.47	2.70												1.35	1.94	3.07		
	EURO 0																				

RECOMMENDATIONS

- **Aiming to achieve technical interoperability of national ETC systems, further innovative efforts and cooperation between IT professionals, companies & authorities is needed**
- **Taking into account experience gained with ETCs to date, authorities of BG and RO are encouraged to accelerate shift from vignette to ETC system**
- **Authorities in all OEM countries are encouraged to make appropriate steps aiming to simplify and harmonize the truck toll rates and their reasonable differentiation in compliance with EU Directives**

THANK YOU VERY MUCH

FOR YOUR KIND ATTENTION!