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Pan-European Corridor X Development: Case of Literal Implementation of the European Transport Strategy Itself or of Change of the General Environment in the Region?

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Abstract

In this paper the implementation of the European Transport Strategy in the case of Corridor X during the last decade is presented. Data and information collected on all the projects along the Corridor and the effective investments realized during the last decade are presented, so that sound conclusions can be formulated concerning the conditions, under which the projects were promoted for implementation, taking also into account strategies, policies, negotiations, initiatives and activities that affected the development of the specific Corridor.

Keywords: Transport and Infrastructure; Pan-European Transport Networks; Project Appraisal and Financing

1. Introduction

The Pan-European Corridor X (**PECX**) is running through the South East Europe (**SEE**) and is the backbone of the SEE Core Network and part of the SEE Priority Axis proposed by the European Commission (**EC**) for the extension of the major trans-European transport axes to the neighbouring countries and regions. The aim of this paper is to debate the conditions and the processes of PECX development during the last decade, i.e. to present the implementation of the European Transport Strategy in practice, through: a) the presentation of this strategy in the SEE and its mechanisms, rules and criteria for project appraisal and financing; b) the presentation of PECX development since the year 2000, with provision of information regarding the financing of projects per transport sector (road and rail) and

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intervention (provision of actual figures and data on the projects, for comparison with the rules and criteria for project promotion described previously); and c) formulation of comments and conclusions, based on the analysis of PECX and on representative case studies of motorway projects, where it is examined whether they have been promoted based on rigid evaluation methods or due to political and/or other criteria.

2. Pan-European Transport Strategy in South East Europe

The Pan-European Corridors (**PECs**) and Areas (**PETRAs**) for the non-EU European territories were defined at the Pan-European Transport Conferences of Crete (1994) and Helsinki (1997). The Crete Corridors running the region of SEE (including Bulgaria, Romania and Slovenia) are Corridors IV, V, VII (Danube), VIII and IX. Later, at the Helsinki Conference, PECX and four PETRAs were defined.

The Prague Declaration on All European Transport Policy (1st Pan-European Transport Conference, 1991) foresaw the indication of the most important transport routes linking the European countries and regions to be considered for improvement and modernization, while more decisively, in Crete (2nd Pan-European Transport Conference, 1994) it was declared that a starting point for future work on coherent infrastructure development at Pan-European level was a set of indicative guidelines, which covered the main infrastructure corridors for the various transport modes.

Furthermore, the overall objective of the Helsinki Declaration (3rd Pan-European Transport Conference, 1997) was to promote sustainable, efficient transport systems – taking into account technical and interoperability aspects in order to facilitate movements at border crossings, which meet the economic, social, environmental and safety needs of European citizens, help to reduce regional disparities and enable European business to be competitive in the world markets. Among other sub-objectives, one is to promote rehabilitation or reconstruction of problematic links, giving at the same time priority to measures, which are able to better exploit the existing infrastructures of the defined PECs and PETRAs.

For the development of PECs, the EC and the participating countries' authorised Ministers for Transport signed Memoranda of Understanding (**MoU**), for each one of the PECs. For the coordination and implementation of these MoUs respective Steering Committees (**SC**) were established and Technical Secretariats (**TS**) to support them, while various regional studies were gradually elaborated for the documentation and prioritisation of projects, as well as for the examination of the development potential of the transport sector. This was also the provision of the MoUs, where the one signed for PECX (Steering Committee for Pan-European Corridor X, 2001) includes elaboration and definition of priorities, budgets and time plans for the development of the Corridor, as well as facilitation of border crossings and ensuring of intermodality and interoperability along the entire Corridor.

Especially in the region of the SEE, the European Transport Policy was more intensively expressed in 2001 and onwards (European Commission, 2001), on the basis of the PECs already established. After the Transport Infrastructure Regional Study – **TIRS** (Luis Berger S.A., 2002) and the Regional Balkans Infrastructure Study – **REBIS** (COWI, 2003) the SEE Core Transport Network was defined, as well as lists of priority projects. A relevant MoU was signed between the participating countries and the EC in 2004 for the development of this regional network and a SC and the SEE Transport Observatory (**SEETO**) were established. Ever since all the European Transport Policy activities in the region are with reference to the SEE Core Network, which would eventually become part of the Trans-European Networks (**TEN-T**) upon accession of the concerned countries into the EU.

In view of the last EU enlargements (2004 and 2007), which would lead automatically to the incorporation of entire Corridors or parts of them into the TEN-T, the EC initiated the revision of the Corridors' concept. Five "Priority Axes" were proposed (European Commission, 2005 and 2007), of which the "South-Eastern Axis" in the Balkan region is actually formulated by the network of the existing

PECs; only some parts of them are excluded (Branches B of PECV and D of PECX, plus PECs IV and IX, which are now parts of the TEN-T).

After the enlargements, in the SEE region Slovenia, Hungary, Romania and Bulgaria have already accessed the EU, Croatia, the Former Yugoslav Republic of Macedonia (**F.Y.R.O.M.**) and Montenegro are candidate countries, whilst Albania and Serbia are potential candidate countries. Cooperation in the transport field and the extension of the Acquis Communautaire in this particular EU oriented region – the so called "Western Balkans" – is therefore more advanced than for the other partner countries of the EU that are included in the European Neighbourhood Policy. Therefore, the EC suggests that cooperation in the Western Balkans should focus on the SEE Core Network and encourages the countries to speed up alignment of their national legislation with the Acquis Communautaire on transport and relevant thematic areas, in order to fully benefit from the accession framework. The EC and the countries of the region are negotiating a Treaty for the establishment of a Transport Community in SEE, targeting the establishment of an integrated market for infrastructure and land, inland waterways and maritime transport and of course the adjustment of the relevant legislation in this region. However, even though the EC envisaged that the Treaty would have entered into force in early 2011, due to political reasons (i.e. Kosovo status) the Treaty has not yet been signed.

3. Financial Means

The funding of projects in SEE includes national resources, but only at a limited percentage, given the difficult economic situation in the respective countries, EU assistance (through the various programs for EU member states, candidate and potential candidate countries), loans from the International Financing Institutions (**IFIs**), such as the European Investment Bank (**EIB**), the World Bank (**WB**) and the European Bank for Reconstruction and Development (**EBRD**), and grants from bilateral donors.

Especially concerning the Western Balkan countries on their direction to integration into European institutions, the EU has established the Instrument for Pre-Accession Assistance (**IPA**), in order to achieve the political criteria through the institutions strengthening, the development of cross-border cooperation and the preparation for the participation of these countries in its policies for the convergence and rural development, which include the sectors of transport and environment. IPA replaced the previous instruments (PHARE, ISPA) and the Financial Instrument for the Western Balkans "CARDS", managed until 2008 by the European Agency for Reconstruction (**EAR**). The Western Balkan countries that are candidates for EU accession are covered by the "Regional Development" component of IPA, which aims to prepare these countries for the implementation of EU cohesion policy, particularly the European Regional Development Fund and the Cohesion Fund.

Finally, for better coordination of financing activities in the region, the Western Balkans Investment Framework (**WBIF**) was launched in 2009. This is a mechanism, consisted of the IFIs and bilateral donors active in the region for promotion and financing priority investments projects in the region. It is supported by the Infrastructure Project Facility (IPF), which actually facilitates the project proposals preparation.

4. Appraisal and Selection Criteria for Transport Projects Financing

It is widely known that the condition of transport infrastructure in SEE is below minimum European standards because of the war in former Yugoslavia and the economic recession in the countries of the region. However, the capacity of the infrastructure remains generally sufficient, except in some cases around important urban concentrations (e.g. Zagreb and Belgrade). Therefore, the main goal of the transport strategy in the region was the reconstruction and rehabilitation and heavy, in most cases, maintenance of destroyed and neglected infrastructure.

The European Strategy for the transport network in SEE of 2001 was the basic framework for investments' planning and definition. It defined the priorities for the development of the Transport Core Network in SEE in function with political, geographical, demographic and regional (socioeconomic) parameters. One fundamental principal of this strategy is that the financial plans for transport infrastructure investments should correspond to economically viable projects and reflect the real financial situation in the region. From other relevant experiences it seems that the potential of large scale projects development varies between 1% and 2% of the GDP of each country.

From the experience of the Community Funds of the EU, investments in infrastructure show declining rates of return over a certain level of financing. On the contrary, the return is high when the infrastructure is insufficient and the basic networks have not been completed. Hence, for the selection of investments the level of regional economic development and the density of the infrastructures should be taken into account. In less developed regions or countries, the international and interregional connections might have higher return in the long term, contributing to the competitiveness of businesses and facilitating mobility of the labour force. Additionally, in regions with a loose and small scale economic base and a large number of small towns it might be more appropriate to construct a regional transport infrastructure (something that is more or less applied in the case of SEE) and in regions with insufficient road networks, financing should also be placed for the construction of road connections with vital economic importance.

The strategy requires objective criteria to be applied for the definition of the level and the type of the investment, in order to maximize the benefits derived from those investments. The return of each investment should be estimated on the basis of the level of the economic development and the nature of the economic activities in the relevant regions, the density and the quality of the infrastructures or the level of congestion, quantifying at the same time the social and environmental benefits.

Investments, and therefore dimensioning of projects, should correspond to the expected in the next decade level of demand. Hence, each decision for project selection and respective financing should be documented by appropriate techno-economic feasibility studies and complete cost-benefit economic and financial analyses. According to the standards of the United Nations Economic Commission for Europe (UNECE) the motorway construction is justified for Annual Average Daily Traffic (**AADT**) higher than 20.000 passenger car units (**PCUs**) per day. However, the actual traffic volumes on the regional network of SEE are much lower. Despite that, projects along PECs, with socioeconomic, but mainly geopolitical importance, secure financing, even though the forecasted traffic in 20-years horizon does not defend such a decision. The parameter of road safety and the networks consecutiveness in terms of marking and readability is also decisive and therefore it is considered purposive the completion of missing links of existing motorway axes, even though the criterion of least daily traffic is not absolutely met.

Similar considerations could be made also for railway projects: doubling of tracks and upgrading for speeds higher than 160km/h presuppose demand higher than 100 trains per day.

At the same time, the criteria for appraising and selecting transport projects for investment under the European Strategy encourage investment in infrastructure to support more environmentally friendly transport modes and a better modal split. The criteria also require that environmental impact from the implementation of infrastructure projects is minimised. Hence, eligibility of projects for funding should be subject to environmental impact assessment studies and strictly follow the relevant land acquisition (expropriation) and resettlement policies and public consultation procedures.

Also, the investments in transport infrastructure should be accompanied by measures for appropriate traffic management, with special emphasis on safety in accordance with national and EU standards. Especially the rail network should be modernized and its interoperability should be ensured with the establishment of the European Rail Transport Management System (ERTMS). Last but not least, in order to achieve the optimum efficiency of transport infrastructure towards regional development, special attention should be paid to the improvement of the connection of isolated, insular or remote regions with

the Pan-European Transport Networks, with particular emphasis on intermodality and sustainable transport and on the connection of ports and airports to the hinterland.

5. Case Study of Pan-European Corridors Implementation: Pan-European Corridor X

The PECX connects: a) Austria to Greece, through the Main Axis, crossing Slovenia, Croatia, Serbia and F.Y.R.O.M. and linking Salzburg with Ljubljana, Zagreb, Belgrade, Skopje and Thessaloniki; b) Austria to Croatia through Branch A, linking Graz with Maribor and Zagreb; c) Hungary with Serbia, connecting Budapest and Belgrade through Branch B; d) Serbia with Bulgaria through Branch C, linking Nis and Sofia; and finally e) F.Y.R.O.M. with Greece through Branch D, from Veles to Florina.

Fig. 1. Pan-European Transport Corridor X (Roads and Railways alignment)

The presented progress on PECX, a case study of realization of the European Transport Strategy, consists of a synthesis of information collected directly from the PECX participating countries, in the framework of their cooperation towards its development, as well as from the IFIs active in the SEE region, relevant studies (TIRS, REBIS) and SEETO. The information and data, part of the detailed Database of the GIS developed for PECX, refer to the investments made per sector of transport infrastructure and type of intervention during the last decade.

5.1. Description of Pan-European Corridor X in the Year 2000 and Today

The Road PECX (Main Axis and branches) has a total length of 2.300km of existing road infrastructure. In the year 2000 (AUTH, 2001), 54% of this length was constructed with full motorway characteristics with two or more lanes per direction and a separation median, 40% was a highway with three lanes in total and a separation median or with one lane per direction, and finally 6% was a national main road with one lane per direction.

Since the year 2000, substantial investments have taken place, whilst large scale investments (with secured financing) are underway in Serbia and F.Y.R.O.M. (see case studies in Section 4.2). Already all

the Corridor parts in Hungary and Croatia have been turned into motorways and in Slovenia works are on-going on Branch A, with foreseen completion by 2012 (AUTH, 2010). Also, by the end of the year all the Branch B from Budapest to Belgrade will be a motorway (works on last 5km are about to be finished in Serbia). So, now motorways form 78% of the total PECX length, and 89% of the Main Axis length. Therefore, the completed motorway construction works in the period 2000-2011 corresponds to 24% of the Corridor's total length.

The Rail PECX (Main Axis and branches) has a total length of 2.528km of existing rail infrastructure. In the year 2000 (AUTH, 2001), 64,2% was single track lines and 35,8% double. 88,7% was operating using electric power traction system and 11,3% using diesel. 11,6% was sufficiently maintained, 63,8% was maintained at medium level, 13,4% was not sufficiently maintained, while for the rest 11,2% of the Corridor length, no clear information existed concerning the maintenance (however 10,4% - of the 11,2% of missing information - concern the Austrian sections, which most probably were maintained to a sufficient extent). National development plans in the year 2000 for Railway PECX foresaw for year 2010 that the percentage of double track lines would reach 42,2% and the percentage of electrified lines 92,9%.

On the contrary to the Road, the Rail PECX remains more or less at the same state of play as in year 2000, due to the fact that the very ambitious plans of the participating countries still require financing. This is of course a consequence of the general bad situation of the railways in the region (e.g. disorganisation), the drop of demand due to the economic recession and the uneven competition against road transport (due to the uneven financing of infrastructure development) in the specific region. The projects realized concerned priority rehabilitation, electrification, upgrading and modernization of existing infrastructures and doubling of specific short length crucial parts of lines, mainly in Austria and Serbia.

5.2. Initially Foreseen and Actual Development of the Problematic Sections of Pan-European Corridor X

The "problematic" sections along PECX (impeding its normal operation), as emerged from the analysis of the physical and operational characteristics and through on-site visits of expertise of the members of the TS, are listed in the summarising Tables 1 and 2, for Roads and Railways, respectively.

Table 1. Problematic sections along **Road Corridor X**: Characteristics, planned (in year 2000) and actual development by 2011

No	Section	Part of PECX	Country	Length (km)	Maintenance/ Pavement condition	AADT 2000 (PCUs/day)	AADT Forecast 2015 (PCUs/day)	Cost (€ million)	Initially foreseen financing sources	Initially foreseen construction completion	TIRS/ REBIS/ SEETO priority project(s) type of intervention	Criteria for prioritization by TIRS/ REBIS	Percentage of completion	Actual or foreseen year of completion
1	Bic - Obrezje	Main	Slovenia	75,5	Good and medium	14.740	34.011	579,4	EIB, EBRD	2004	- / -/ -	-	100%	2010
2	Maribor - Ptuj	A	Slovenia	20,8	Good and medium	17.400	54.945	486,5	EIB, EBRD	2004	- / -/ -	-	65,7%	After 2012
3	Ptuj - Gruskovje	A	Slovenia	18,0	Good and medium	7.800	34.988							
4	Macelj - Krapina	A	Croatia	19,4	n.a.	8.033	28.366	161	Public Private Partnership	2005	Motorway (I)/ Motorway/ -	High demand, Medium financing feasibility, Network consecutiveness	100%	2007
5	Velika Kopanica - Zupanja	Main	Croatia	24,15	n.a.	2.634	16.824	44	National	2001	- / -/ -	Network consecutiveness, High importance for international transport	100%	2002
6	Zupanja - Lipovac	Main	Croatia	29,43	n.a.	2.634	16.824	150	EIB, EBRD	2005	Motorway (IV)/ Motorway/ -		100%	2006
7	Kiskunfelegyhaza - Kistelek	B	Hungary	17	Medium	7.488	15.504	365	Public Private Partnership	2005	- / -/ -	-	100%	2006
8	Kistelek - Szeged	B	Hungary	29,2	Medium	7.104	15.703						100%	2006
9	Szeged - Roszke	B	Hungary	13,8	Medium	7.104	15.118						100%	2006
10	Leskovac (Pecenjevce) - Grabovnica - Grdelica	Main	Serbia	27,13	Bad	7.990	16.215	69	National & International	n.a.	Rehabilitation - Improvements (I)/ Rehabilitation/ Rehabilitation	Network consecutiveness, High importance for international transport, Good financing feasibility	80,4%	After 2015
11	Grdelica - Vl. Han	Main	Serbia	27,13	Bad	7.596	15.350	200					0%	
12	Vl. Han - Srpska Kuca - Levosoje - Presevo	Main	Serbia	67,73	Bad	6.015	11.883	95					29,9%	
13	Horgos - Novi Sad	B	Serbia	114,7	Good	6.573	14.147	528	National & International	n.a.	Motorway (I)/ Motorway/ Motorway	High demand, Good financing feasibility, Network consecutiveness, High importance for international transport	96%	2011
14	Novi Sad - Batajnica (Belgrade)	B	Serbia	61,15	Bad	12.348	26.813						100%	
15	Nis - Malca	C	Serbia	17,23	Medium and Bad	5.285	14.987	36	National & International	n.a.	Rehabilitation (I)/ Rehabilitation/ Rehabilitation	Good financing feasibility, Network consecutiveness, High importance for international transport	56,3%	After 2015
16	Malca - Bela Palanka	C	Serbia	30,61	Bad	3.838	11.803	180					0%	
17	Bela Palanka West - East	C	Serbia	4,75	Good	3.775	11.696						0%	
18	Bela Palanka East - Pirot West	C	Serbia	25,47	Bad	3.326	11.075						0%	
19	Pirot West - East	C	Serbia	5,25	Good	3.329	10.688	15					0%	
20	Pirot - Dimitrovgrad	C	Serbia	25,48	Bad	2.935	10.280	60					0%	
21	Kalotina - Dragoman	C	Bulgaria	12,5	Good	7.753	22.762	n.a.	EU	2005	-/ -/ -	-	100% (without median)	2005
22	Dragoman - Slivnica	C	Bulgaria	12,5	Good	7.453	21.276	42						
23	Slivnica - Sofia ring-road	C	Bulgaria	23	Good	11.177	30.539	70						
24	Tabanovce - Kumanovo	Main	F.Y.R.O.M.	7	Medium	2.634	6.287	10	n.a.	n.a.	Motorway (II)/ Motorway/ Motorway	Network consecutiveness, Medium financing feasibility, High importance for international transport	100%	2011
25	Demir Kapija - Udovo	Main	F.Y.R.O.M.	22,27	Medium	4.010	8.532	169	n.a.	n.a.	2nd carriageway construction at different alignment/ 2nd carriageway construction at different alignment/ 2nd carriageway construction at different alignment	Medium financing feasibility, Network consecutiveness, High importance for international transport	0%	2015
26	Udovo - Smokvica - Gevgelija	Main	F.Y.R.O.M.	25,19	Medium	5.357	9.552		EBRD, EIB, PHARE	-			44,5%	
27	Veles - Prilep*	D	F.Y.R.O.M.	72,6	n.a.	6.955	13.703	150-178	EBRD & WB - National	-	New 2-lanes road construction/ New 2-lanes road construction/ New 2-lanes road construction	High importance for international transport	0%	n.a.
28	Prilep - Bitola*	D	F.Y.R.O.M.	32	Good	4.115	8.107	n.a.	National	-	No / No/ No	-	0%	n.a.

n.a.: not available information, -: not applicable, *: not motorway project, included in problematic road sections for rehabilitation

(I): Projects maybe funded and implemented rapidly, (II): Projects requiring some additional investigation for final definition before likely financing, (III) Projects requiring further investigations for final definition and scheduling before possible financing, (IV): projects to be discarded at that time (2002)

Table 2. Problematic sections along **Rail Corridor X**: Characteristics, planned (in year 2000) and actual development by 2011

No	Section	Part of PECX	Country	Length (km)	Percentage of double track	Traction system	Level of Maintenance	Train s/day 2000	Trains/da y Forecast 2015	Type of project initially foreseen	Cost (€ million)	Initially foreseen financing sources	Initially foreseen constructio n completion	TIRS/ REBIS/ SEETO priority project(s) type of intervention	Criteria of prioritization by TIRS/ REBIS	Finally promoted project(s)	Actual or foreseen year of completion
1	Zagreb - Sisak	Main	Croatia	48,6	0	Electric	Medium	36	40	Doubling of tracks	n.a.	National and International	2020	No / 1) Remote rail traffic control system 2) Rail track overhaul 92,8km / 1) Remote rail traffic control system 2) Rehabilitation 100,8km (at conceptual stage)	n.a.	1) Rail track overhaul 10,6km 2) Remote rail traffic control system 3) Upgrading 34km for 160km/h	1) 2004 2) 2010 3) 2010
2	Sisak - Novska	Main	Croatia	68,16	0	Electric	Medium										
3	Novska - Vinkovci	Main	Croatia	151,48	100	Electric	Medium	42	46	-	-	-	-				
4	Vinkovci - Tovarnik	Main	Croatia	33,91	100	Electric	Medium	21	23	-	-	-	-				
5	Zagreb - Dugo Selo	Main	Croatia	21,2	100	Electric	Medium	173	190	-	-	-	-				
6	Dugo Selo - Kutina	Main	Croatia	57	0	Electric	Medium	55	61	Doubling of tracks	n.a.	National and International	2020				
7	Kutina - Novska	Main	Croatia	26,41	0	Electric	Medium										
8	Budapest - Kelebia	B	Hungary	156	5	Electric	Low	46	51	Double track alignment, Upgrade for speed up to 200km/h	n.a.	French companies	2010	-/ -/ -	-	-	-
9	Sid - Beograd (via Stara Pazova)	Main	Serbia	119,5	88,9	Electric	Low/ Medium	98	108	Reconstruction and modernization for 160km/h	n.a.	National and International	2010	Priority rehabilitation (I)/ Priority rehabilitation/ Upgrading	High demand, Good financing feasibility, High importance for international transport, Network consecutiveness	Reconstruction and modernization for 160km/h	Partly by 2012
10	Beograd - Velika Plana (via Mladenovac)	Main	Serbia	90,4	15,6	Electric	Low	34	37	High speed railway line	n.a.	National and International	2010	Priority rehabilitation (I)/ Priority rehabilitation/ Upgrading	High demand, Good financing feasibility, High importance for international transport, Network consecutiveness	Reconstruction and modernization	Partly by 2012
11	Beograd - Velika Plana (via Rakovica & Mala Krsna)	Main	Serbia	94,3	0	Electric	Medium	24	26	High speed railway line	n.a.	National and International	2010	Priority rehabilitation (I)/ Priority rehabilitation/ Upgrading	High demand, Good financing feasibility, High importance for international transport, Network consecutiveness	Reconstruction and modernization	Partly by 2012
12	Subotica - Stara Pazova	B	Serbia	149,6	2,4	Electric	Medium	46	51	High speed railway line	n.a.	National and International	2020	Priority rehabilitation (I)/ Priority rehabilitation/ Upgrading	High demand, Good financing feasibility, High importance for international transport, Network consecutiveness	Reconstruction and modernization for 120km/h	Partly by 2012
13	Kalotina - Sofia	C	Bulgaria	57,1	14	Electric	Medium	66	73	1) Upgrading for 120-160km/h 2) Electrification of Dragoman - Dimitrovgrad line	1) 58 2) 22	n.a.	1) 2010 2) 2005	Modernization (I)/ -/ -	Medium demand, Good financing feasibility, High importance for international transport, Network consecutiveness	1) Upgrading for 160km/m 2) Electrification of Dragoman - Dimitrovgrad line	1) 2013 2) 2005
14	Tabanovce - Zgropolci (via Skopje)	Main	F.Y.R.O.M.	104,22	0	Electric	Medium	80	88	Reconstruction and capital overhaul	20	Stability Pact, EIB	n.a.	Rehabilitation and upgrading signaling and telecommunications system (I)/ Rehabilitation and upgrading signaling and telecommunications system / Rehabilitation and upgrading signaling and telecommunications system	Good financing feasibility, High importance for international transport, Network consecutiveness	Rehabilitation of 131,4km and upgrading signaling and telecommunication s system	2015
15	Zgropolci - Demir Kapija	Main	F.Y.R.O.M.	50,00	0	Electric	Medium										
16	Demir Kapija - Miravci	Main	F.Y.R.O.M.	21,50	0	Electric	Medium										
17	Miravci - Gevgelija	Main	F.Y.R.O.M.	30,00	0	Electric	Medium										
18	Gevgelija - Idomeni (cross border zone)	Main	F.Y.R.O.M.	10,00	0	Electric	Medium										
19	Veles - Bitola	D	F.Y.R.O.M.	129,33	0	Diesel	Medium	-	-	-	-	-	-	No/ Upgrading / Upgrading	-	-	-
20	Bitola - Kremenica	D	F.Y.R.O.M.	16,70	0	Diesel	Low	-	-	-	-	-	-	Rehabilitation (III)/ /Yes	High importance for international transport, Network consecutiveness	Upgrading for 120km/h	2014
21	Idomeni - Thessaloniki	Axis	Greece	76,6	0	Electric	Low	32	35	Doubling of tracks and electrification	n.a.	n.a.	2010	-/ -/ -	-/ -	1) Electrification and modernization for 160km/h 2) New Polykastro - Idomeni line	1) 2006 2) 2013
22	Mesonission - Florina	D	Greece	19	0	Diesel	Low	-	-	n.a.	n.a.	n.a.	n.a.	-/ -/ -	-/ -	Modernization/ Electrification	2006

n.a.: not available information, -: not applicable
(I): Projects maybe funded and implemented rapidly, (II): Projects requiring some additional investigation for final definition before likely financing, (III) Projects requiring further investigations for final definition and scheduling before possible financing, (IV): projects to be discarded at that time (2002)

The tables illustrate the sections' characteristics, the initially foreseen investments (e.g. new infrastructure, rehabilitation, upgrading) and time-plans, their prioritization according to the multi-criteria analyses of TIRS, REBIS and SEETO, and finally their actual development. Information is provided per project about their maturity (e.g. bottlenecks, network's consecutiveness, high return of investment, etc.). This works as a description of the conditions, under which they were promoted for financing, in order to give the reader the opportunity to formulate conclusions on whether they were purely advanced or have been pushed forward without necessarily being technically or financially justified.

As it emerges from these tables, the achieved progress on PECX is significant only on the road component, despite the general transport strategy for promotion of the more environmentally friendly modes of transport (namely for PECX its rail component).

6. Specific Cases of Motorway Projects Promotion for Financing

The issue raised and discussed in this paper is whether the evolutions of the last years on the development of PECX (and in extension, of the SEE Core Network) was actually a direct result of the project (actually of many single projects) as a priority of the EU Regional Development, Enlargement and Transport Policies. Was it a result of the maturity of the project or did it emanate from the stabilization of the situation in the region and the turn of the climate in the region concerning the relations of the SEE countries with the international environment, institutions and organizations? Therefore, apart from the general tables presented that refer to the entire Corridor, it is deemed appropriate to examine in more detail some characteristic cases of motorway projects on PECX, in order to draw a conclusion concerning the conditions for project financing promotion. Two of these projects are in Serbia and one in F.Y.R.O.M. and have a similar and more or less parallel history of confrontation by their potential financiers. More specifically, the projects in Serbia concern the transformation of the existing PECX parts from Leskovac to Presevo on the Main Axis (projects no 10-12 of Table 1) and from Nis to Dimitrovgrad (projects no 15-20 of Table 1) on Branch C to motorways. In F.Y.R.O.M. the project initially referred to the transformation of the existing PECX parts between Demir Kapija and Gevgelija (near the Greek border) to a motorway (projects no 25-26 of Table 1). Now it is underway for new motorway construction at a different alignment between Demir Kapija and Smokvica, since one part of the section between Gevgelija and Smokvica (11km) was constructed in the meantime.

The project in South Serbia had been prepared (feasibility studies and designs) before 2004. The construction began at its northern part to bypass Leskovac city and reached up to Grabovnica settlement. Some works also started in the South (earthworks and some structures/overpasses), but they stopped due to economic reasons. All these works were financed by the national budget and in 2009 were completed for a length of 22km. Besides, in 2005, with a loan from EBRD the entire existing road was rehabilitated. Branch C was in the worst condition, running through a very difficult relief and with AADT in 2000 of slightly higher than 3.000PCUs/day. On PECX, apart from the highest priority project of construction of the Belgrade bypass (IRR 20,4%), to relieve the city from transit traffic, the only motorway project prioritized by the regional studies was on Branch B. Its section between Novi Sad – Belgrade (71,3km) was constructed in the meantime and the attempt for concession of the rest of the Serbian Branch (114,7km) was unsuccessful and the motorway construction is now completed as public work.

The motorway project in F.Y.R.O.M. had been prepared (feasibility study and design) in the late 90's, where the exploitation of the existing road as the one of the two carriageways of the future motorway was foreseen. The existing road follows a high bendiness alignment through the Axios gorge, mainly in its sector between Demir Kapija and Udovo. All efforts to achieve the project financing by the EIB were unsuccessful. However, in 2005 the EBRD financed the construction of the easiest part of the road to a motorway, with one emergency lane at the one or the other side of the motorway, as happened gradually

in the past along the Main PECX in F.Y.R.O.M. The Internal Rates of Return (**IRR**) of the feasibility study for the transformation of the existing road to a motorway for design speed 100km/h was 3% for D. Kapija – Udovo, 8,8% for Udovo – Miletkovo (Smokvica) and 11% for Miletkovo – Gevgelija. The IRR of the entire project was 5,47% (Scetauroute International, 1999).

The above projects were strongly supported by the countries for several years, despite their very low maturity and the economic situation of the countries especially during the 90's. The countries saw the TS as a potential technical consultant for documentation of their claims and immediately after the TS constitution requested its contribution to support them at their negotiations with the IFIs, but repeatedly they received the answer that the projects were "not bankable". Furthermore, the initiative "Hellenic Plan for the Economic Reconstruction of the Balkans" (**Hi.P.E.R.B.**) launched in 2002, gave new perspective to the projects, since the major part of the foreseen economic assistance was directed in co-financing projects on the Main Axis of PECX in the southern parts of Serbia and F.Y.R.O.M. The initial financial plans included national sources and EIB loans for both projects and also IPA funding for the project in F.Y.R.O.M. Later the involvement of the WB was requested for the project in Serbia, in a package that invoked also the motorway project on Branch C.

For both candidate projects to be included in the Hi.P.E.R.B., updated feasibility studies (Miltiadou, 2006 and 2007) were conducted, in order to examine the socioeconomic feasibility of various alternative upgrading solutions, mainly in terms of dimensioning, while especially for the F.Y.RO.M. project an additional preliminary design was prepared for entirely new motorway construction on a different alignment. The studies received good review by the potential financiers of the projects. Especially the traffic forecasts were found realistic and well documented, with no exaggerations or overestimations. The results, in terms of socioeconomic indicators values, were not high (IRR of 7% for both projects), falling short than the threshold of 10% set by the relevant guidelines for transport infrastructure investments (European Commission, 1997).

Nevertheless, the potential financiers, after several years of denial, recognised the high expected - non quantifiable - benefits from the PECX completion for the socioeconomic and regional development of the specific region and agreed on the promotion of the projects, under the precondition of Environmental Impact Assessment documentation. But later, despite this initial agreement, the financiers required for both projects the examination of several other alternative solutions for the development of motorway in stages: construction of single structures (bridges/tunnels or only tunnels) in the first stage and their doubling after reasonable time period (second stage). However, the economic indices of these alternatives for various years of realisation of the second phase (after 10 or 20 years or after the end of the analysis period) were not significantly improved to justify solutions of staged implementation of the projects (Miltiadou, 2012) and the financiers approved the one-stage construction, of a new motorway with reduced profile (3,50m traffic lanes width) in the case of the project in F.Y.R.O.M. and with ordinary profile (3,75m traffic lanes width) in the case of the Serbian project.

6.1. Project Documentation Considerations: Demand Forecasts and Infrastructure Dimensioning

A forecast of future demand is obviously the basis of the approaches and tools for the analysis of feasibility and utility of the various infrastructures development plans and of the viability of the respective investments. The TS traffic forecasts along the PECX (AUTH, 2003) have confirmed, apart from some exceptions, that the demand will remain relatively low in the mid-term and shall not return to the levels observed before 1990 (namely before the war in ex Yugoslavia) until 2015, the target year (horizon) of the forecast.

However, the persistent requests of the countries that were addressed to the international community became increasingly noticeable. These requests couldn't be ignored by the international community,

mainly those referring to the two projects described previously, of a total length of 150km (of course in very difficult relief) that would complete the entire transformation of the Main PECX to a motorway. In this aspect two diametrically opposite attitudes had to be bridged: a) the maximalistic attitude that concerned the interested countries, which supported the unconditional realization of admissibly over-dimensioned motorways (27,40m cross section width), if one considers the present and forecasted demand and b) the attitude expressed by third parties (mostly by the IFIs), presented a dogmatic bankers' financial approach that declined almost the entire regional development perspective and that didn't accept anything, but only an investment on maintenance of the infrastructures and specific improvements of the geometrical characteristics of the alignment and/or of the cross section.

Nevertheless, a third approach, median in relation with the aforementioned extreme positions, is based on a rationalism, despite the political claim of international financing for the regional reconstruction on one hand and the dogmatic attachment at the cost-benefit analysis on the other. This position is based on the demand forecasts in the mid-term horizon (after 15 years), where it should be noted that the short-term forecasts are confirmed by recent actual traffic counts. The forecasts for 2015 were about 14.000PCUs/day in the case of the Serbian project and 8.300PCUs/day in the case of the F.Y.R.O.M. project and led to relatively low IRRs (7%). These numbers did not suggest of course an inarguable investment in terms of a strict analysis such as the type of the cost-benefit comparison. However, such a straightforward analysis can't take into account the regional geopolitics, nor the modest at the moment, but undoubtedly real, potential of the increase of movements of persons or exchanges of goods.

For a short time period it seemed that the interested countries were obliged to yield from their "all or nothing" attitude, that is either a wide highway or nothing, thanks to an effort of conviction based on results estimated by the forecast of the evolution of the level of service offered by a range of motorway profiles according to the expected traffic results for 5-year intervals in the period 2005 – 2035. It was demonstrated that the high level of service (levels A and B) towards the end of the life cycle (calculated according to "Highway Capacity Manual") would remain practically stable, in spite of the evolution of demand, and independently of the choice of the cross section profile, which could be of 22,60m or of 24,90m instead of 27,40m, leading to savings on the investments varying from 10% to 15%.

But later on, it was observed that the position of the representatives of the IFIs is modulated by the each time political and economic situation in the applicant country and their policy towards the country, in a sort of cliental relation, that follows the same rules to seem like that the client is right but has to obey to the rules of the seller for the completion of the transaction. In the motorway cases described in the above, the EIB seemed to be more consistent with its initial agreement on a modest dimensioning of the motorways. On the contrary, the WB presented revised feasibility exercises for both the projects on the Main Axis and the Branch C in Serbia based on updated, substantially increased, estimations of the cost for the widest cross section alternative, which together with alterations of the other parameters provided IRRs higher than 12% for both the motorway projects, even for the very costly and with lower demand project on Branch C (Miltiadou, 2012).

The tools of transport demand forecast, and mainly the tools of socioeconomic and financial project appraisal, are products offered for the facilitation of promotion processes of projects and investments. In these tools, the subjective human factor enters into the formulation of scenarios, constraints and assumptions and in extension also in inputs, thus affecting (and even allow manipulating) the final results. This is not an arbitrary opinion since, during the negotiation process with the IFIs, the assumptions and results of the same study where characterised realistic and then pessimistic, in order to impose revisions of the analyses to somehow "improve" the results. These judgments and attitudes obviously resulted from the level of readiness and the degree of will of each institution (to finance the project) that differed.

The doctrinal valuation of the performance indices of the investment (IRR, NPV, B/C) generates perverse effects within the study sector, since the thresholds above of which an investment becomes

attractive for financing are more or less fixed. In other words, the end justifies the means. According to our experience from the participation in the project financing processes, it seemed that the IFIs, normally don't block financing from the beginning, but they stall it until a degree of maturity. They take into account not only the opportunity of an individual project but also the general condition (geopolitical, economic etc.) in each country. This practice is achieved through several revisions of the documentation studies, for the amendment of assumptions or the examination of additional development (implementation) scenarios (staged implementation, dimensioning, late construction, etc.).

7. Conclusions

This paper presented the progress of implementation of PECX during the last decade. From the analysis it emerges that this progress is remarkable on roads, while for the railways large investments are pending. According to the recorded development and the underway projects, the Road PECX will be developed more or less by the target year set for the implementation of the Pan-European Corridors (2015).

In the northern countries of PECX the development of corridor was ahead, since these countries did not face the difficulties of the ex Yugoslavian countries. Slovenia became smoothly independent and Croatia was one step further than Serbia and F.Y.R.O.M. in its candidacy for EU accession and will access the EU in mid-2013. The EU countries and the EU candidates, based on their relatively improved - or at least better - economic situation and the economic assistance through the structural funds and the pre-accession instruments, succeeded large investments in transport infrastructure. On the contrary, Serbia and F.Y.R.O.M., with EU orientation since 2001, but in difficult economic situation for several years, could only benefit from the various IFIs and small EU assistance through the EAR and the CARDS (and F.Y.R.O.M. previously from PHARE) programmes.

The prioritisation of infrastructure projects and their eligibility for financing should on one hand depend on their financial and socioeconomic feasibility and on the other hand on their social, regional and trans-national character. But this only in the case that a country has the good will to follow a coordinated international development plan. The cooperation for the development of PECX succeeded due to the efforts of its structures, but fundamental condition for the success was the constructive spirit of the participating countries to align their national policies to the Corridor's development, but mostly to their capability of exploiting the funds directed to the specific Corridor according to the European Transport Strategy.

The results of the process of project prioritisation have deviations from the actual investments made. There are examples of projects that have been implemented on Road PECX that the demand couldn't justify the transformation of existing roads to motorways, such as the section V. Kopanica – Zupanja – Lipovac in Croatia (AADT of 2.634PCUs/day in year 2000 – Projects 5-6 in Table 1) or the section Tabanovce – Kumanovo in F.Y.R.O.M. (6.287PCUs/day – Project 24 in Table 1). Also, on the wider network in the Western Balkans region, the axes Bar – Boljare in Montenegro and the Kukes – Morine – Pristina in Albania and Kosovo are underway for implementation through concession contracts, with very low demand but high importance for the countries involved.

As a final conclusion it can be said, that the progress made on PECX development is a result of a median confrontation of the projects for promotion; it is not strictly based on the results of the relevant studies, but seems that it takes into account the geopolitical environment and non quantifiable benefits for regional development, as it should. The financed projects mainly meet the principal set by the Helsinki declaration of investing on the improvement of the existing infrastructures. Moreover, this was the guide to define the Corridors, e.g. the alignment follows major existing international transport routes.

Finally, in the recently published proposal of the EC for a dual-layer TEN-T, the "Core" (priority for Europe) and the "Comprehensive" (supplementary to the Core) networks have been defined. It appears that PECX provides the main connections of the Southeast Europe Network with the TEN-T Core Network and will eventually become part of it after the accession of the Western Balkans countries in the EU (Miltiadou, 2012). Therefore, up to then there is a big potential (and challenge) for the Rail PEC X to exploit the recommendation to complete the transport infrastructure in third countries, which serve as links between parts of the Core Network in the EU (European Commission, 2011).

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