

CHANGES IN THE DESIGN AND IMPLEMENTATION OF RAIROAD PROJECTS IN HUNGARY AFTER THE EU ACCESS WITH SPECIAL REGARDS TO TSI

XV. EUROPEAN TRANSPORT CONGRESS

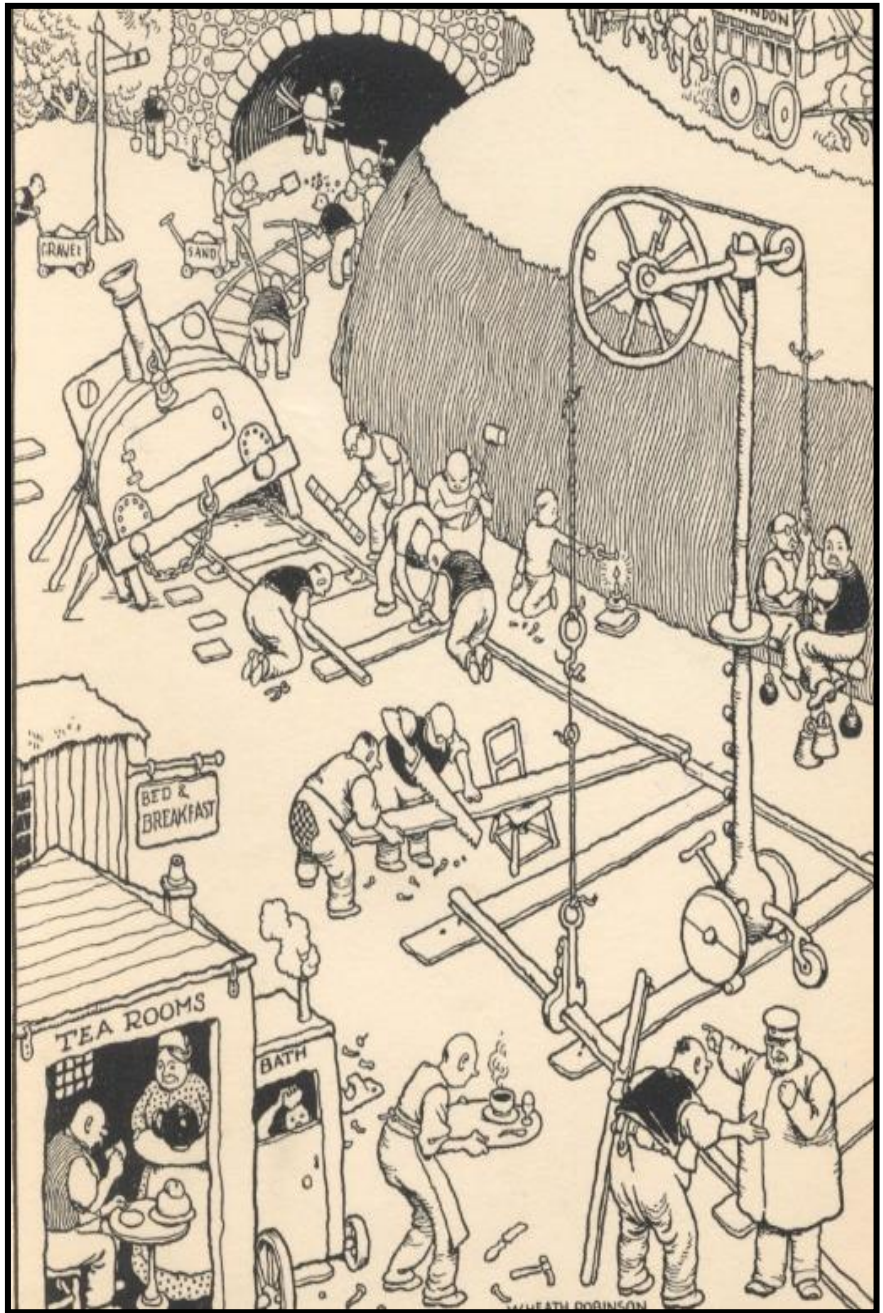
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FŐMTERV Ltd.

Content

- Hungarian railway in Europa
- Aftermath of the unfavorable changes of the railway sector
- Infrastructure development tendency
 - from the 90's until the accession
 - after the accession
- Comparison of investments
- Changes in design
- Set of requirements for the future infrastructure projects

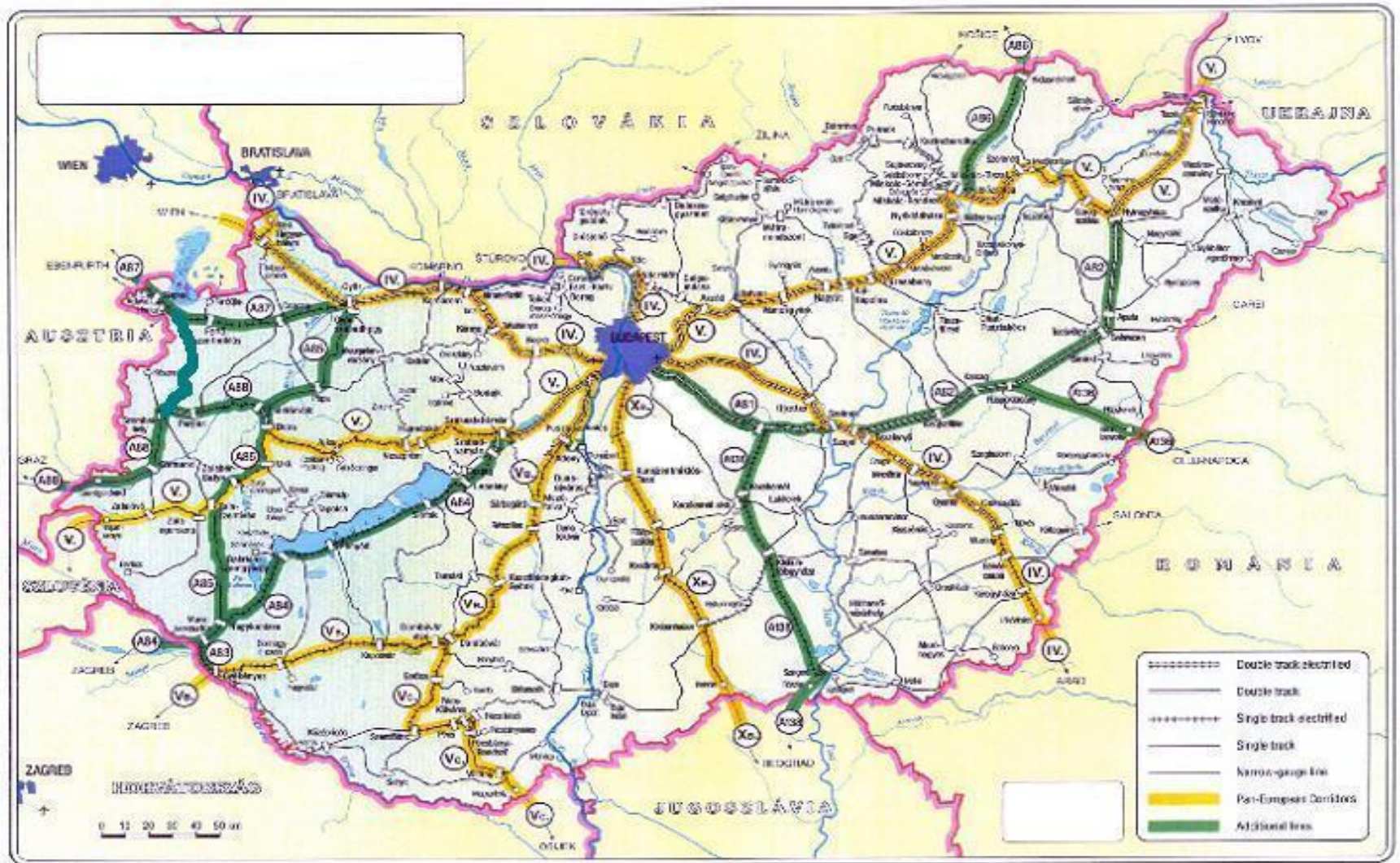




Hungarian railways in Europa

Hungary in crosspoint of railway corridors

Until the 60's railway and railway industry could perform on world level



Due to motorization and collapse of socialist regime the positions of railway have weakened significantly

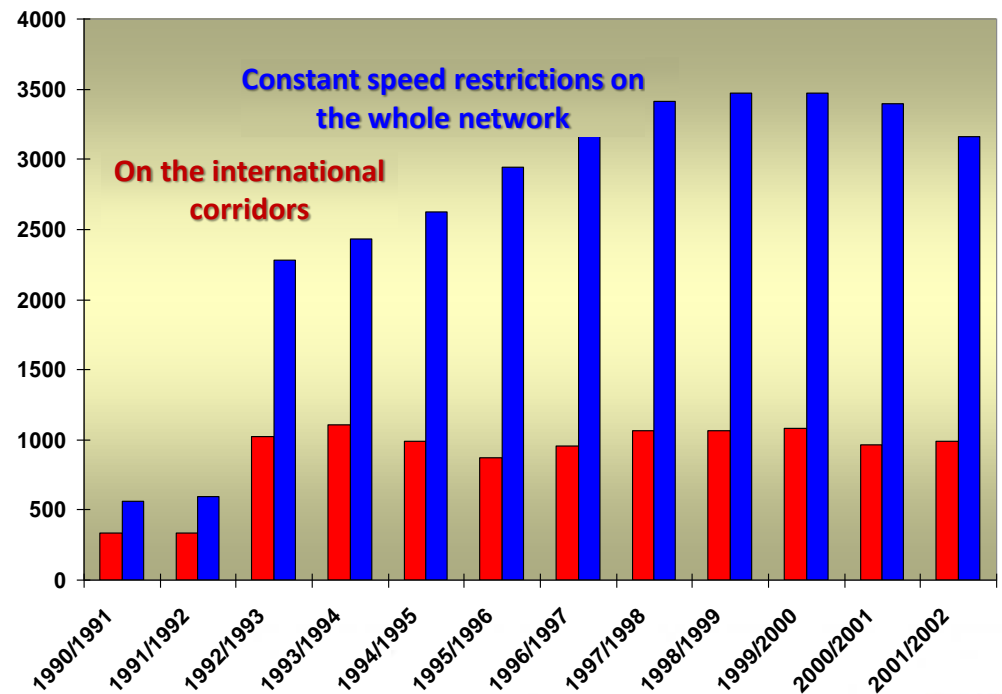
Comparison of railway's characteristics

Length, density of network is above the average, but not the level of service

Year	Country	Area of the country [Tkm ²]	Population [Millions]	Population density	Length of lines [km]	of which double track	of which electrified	Line [m/km ²]	Staff (x1000)	Passenger	Passenger km	Av.dist	Tonna	Tonnakm
2015	EUROPA inc. Turkey				343532	112184	178542		2124	9385	583738	62,2	2640	2833870
2015	EU				205895	69038	111755		875,0	7220	391756	54,3	692	254442
2000	Hungary	93	10,1		7768			83,5	56,0		8788			7852
2015		93	9,8	106	7894	1234	3078	84,9	38,5	116,6	5655	48,5		
2000	Austria	84	8,1		5643			67,2	53,5		8140			13922
2015		84	8,6	102	4937	2087	3517	58,8	41,2	247,8	11537	46,6	76,7	20685
2000	Czech republic	79	10,3		9430			119,4	91,5		7710			20732
2014		79	10,5	134	9466	1964	3217	119,8	39,7	169,7	7170	42,2	66,4	11095
2000	Nederlands	41,5	15,7		2808				67,7		14425			
2015		42	16,9	408	3016		2107		12,7	319,8	17770	55,6		
2000	Poland	312,7	38,7		23210			74,2	217,8		19928			67679
2015		313	38,0	122	18510	8606	11777	59,1	30,1		7486			28720
2000	France	547	58,9		31724			58,0	175,1		61573			53855
2015		549	66,5	121	29921		15957	54,5	86,0	1123	83242	74,1		33116
2000	Germany	357	82,0		38127			106,8	209,6		59432			72389
2015		357	80,9	227	33331	18201	19983	93,4		2008	79257	39,5	218	72913
2000	Italy	301,2	57,5		16041			53,3	118,3		49500			22900
2015		301	60,8	202	17041	7678	12136	56,6	71,4		40476			10267

Aftermath of the unfavorable changes of the railway sector in the 80's

- Consequences of being underfinanced
- Speed restrictions
- The problem



	Pcs	In running	Average age (years)
Power cars	1019	744	28,40
Passenger coaches	3197	2553	25,75
Freight coaches	18608	13697	24,6
Hired freight coaches	1078	1078	

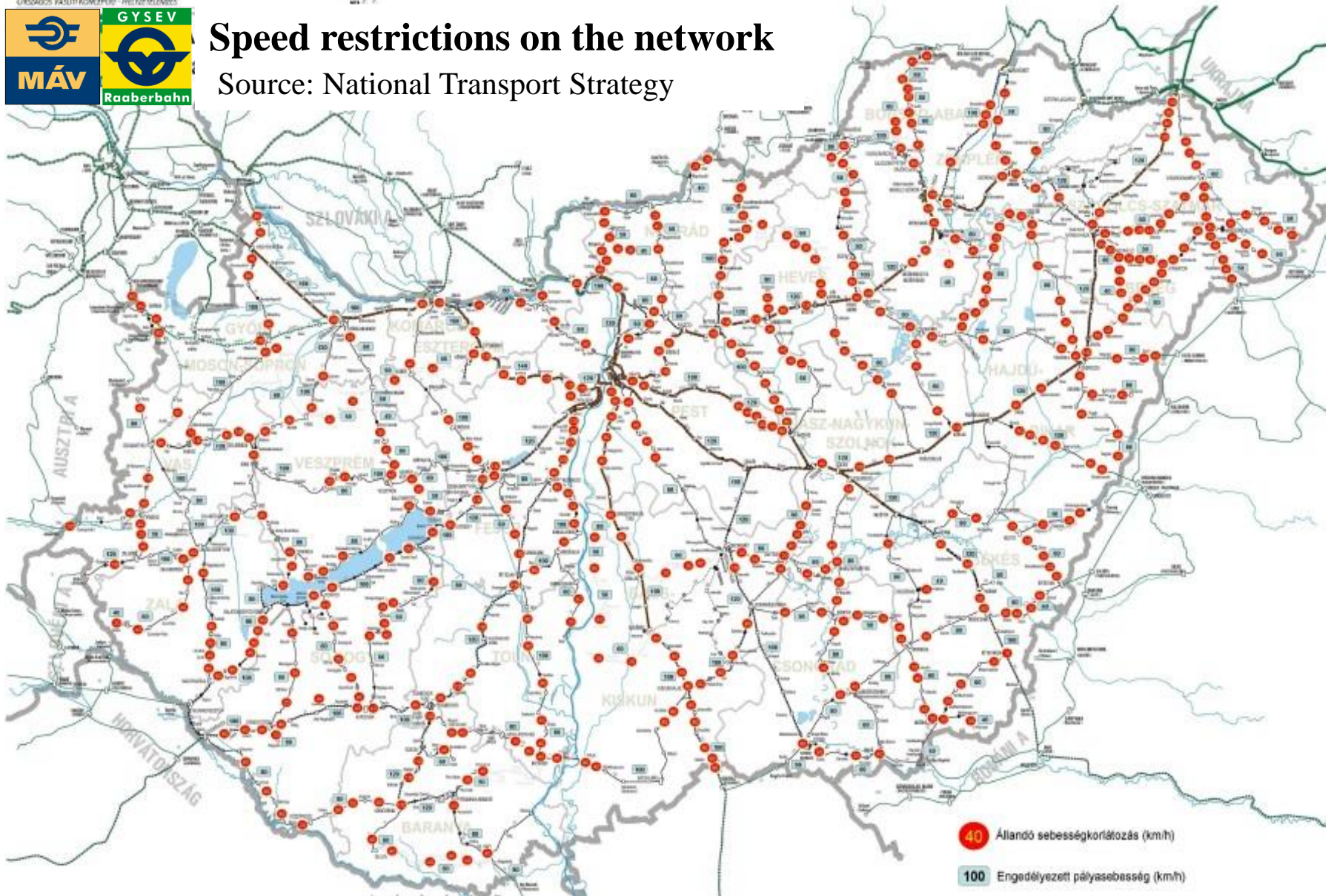


**Consequence of being underfinanced at the end of 90's:
the conditions of the track got worse, the vehicles became obsolete**



Speed restrictions on the network

Source: National Transport Strategy





**The problem - Railway station before improvement
Platform without equal opportunities, traffic limitation**

Infrastructure development tendency from the 90's until the accession

The first 10 years until EU access—learning process under control

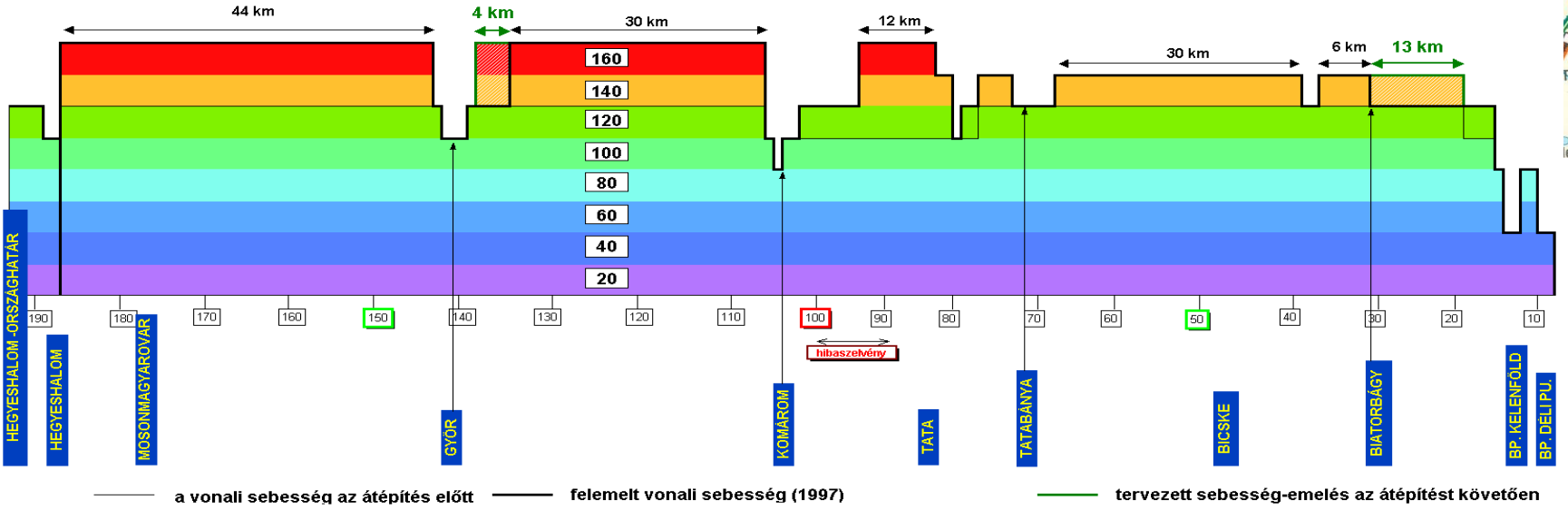
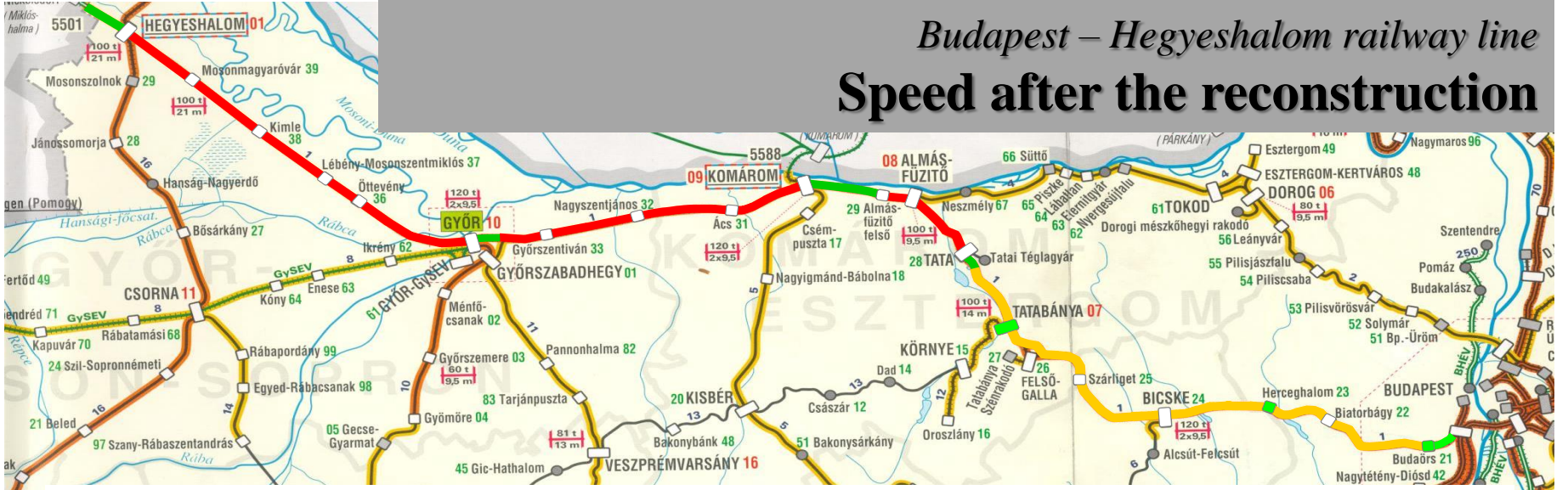
Conditions

- EU and IFI support is small part of complete railway investment budget (5-20 %)
- EU procedures— international public procurement – strict financial conditions
- Co-financing requirements (national budget and/or EIB, EBRD, KFW)
- EU ex ante system (Part of the responsibility is on EU side)

Characteristics

- Clear procurement, evaluation and contracting conditions (EU PG)
- Determined technical content, eligible costs (only for railways eg. Tatabánya, Zalaegerszeg, Monor local authorities contributions)

Budapest – Hegyeshalom railway line Speed after the reconstruction



The first railway line with 160 km/h speed (source : MÁV)

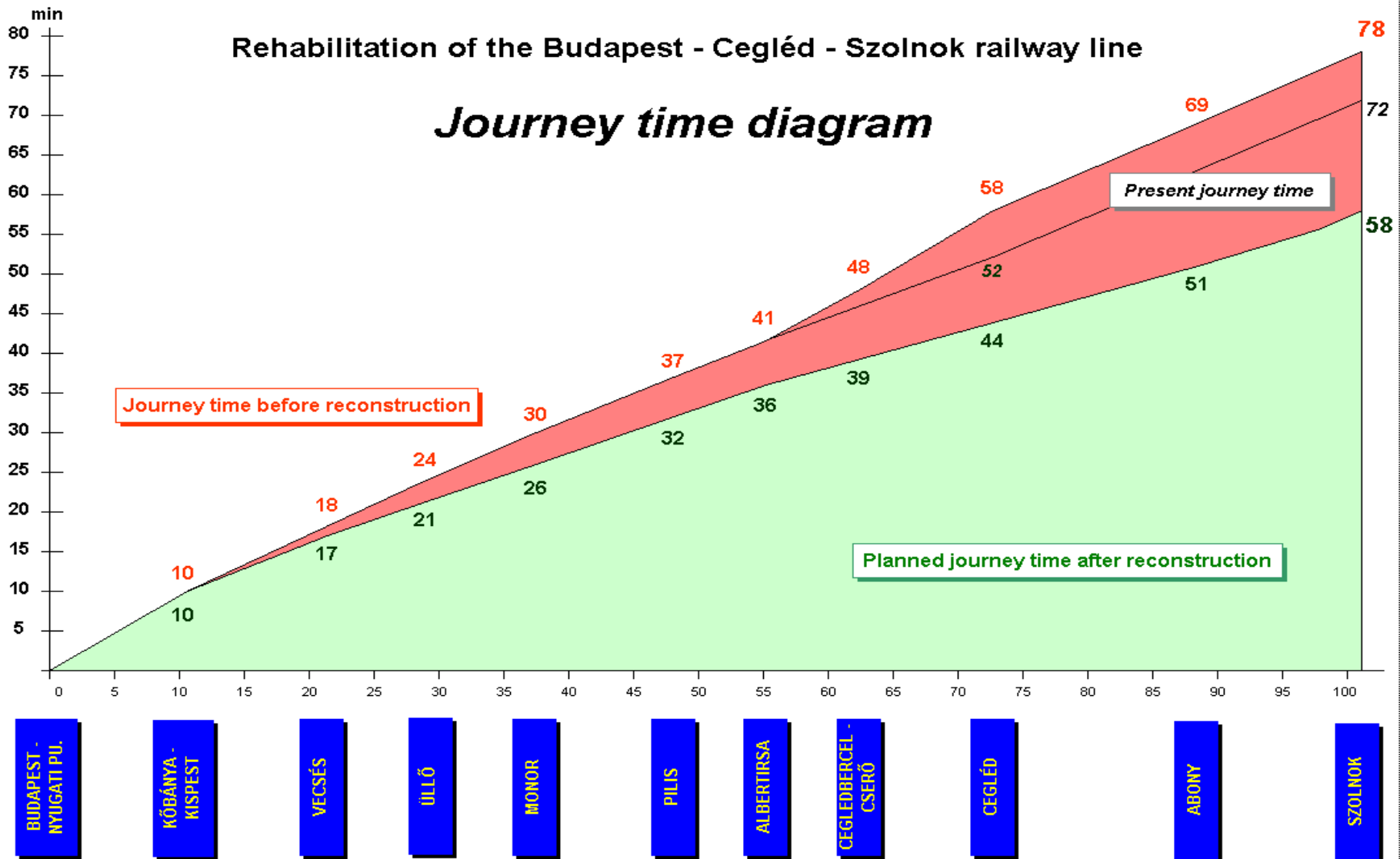
No. Tender	Tender Name	2001		2002		2003		2004		2005				2006		2007	
		Half 1	Half 2	Half 1	Half 2	Half 1	Half 2	Half 1	Half 2	Qtr I	Qtr II	Qtr III	Qtr IV	Half 1	Half 2	Half 1	Half 2
ISPA 2000/HU/16/P/PT/001																	
Rehabilitation of the Budapest - Cegléd - Szolnok - Lőkösháza railway line (Stage 1: Vecsés - Szolnok Section)																	
Track Construction																	
BL 111012.1	Reconstr. of station Vecsés; Üllő																
BL 111600.1	Reconstr. of station Pilis																
BL 111400.1	Reconstr. of station Monor																
BL 111117.1	Railway section Vecsés - Albertirsa																
BL 111821.1	Railway section Albertirsa - Cegléd																
BL 112200.1	Cegléd station																
BL 112325.1	Railway section Cegléd - Szolnok																
Signalling Equipment Works																	
BL 141014.1	Signalling equipment of station Vecsés; Üllő; Monor																
BL 141400.2	Provosional signalling equipment of station Monor																
BL 141117.1	Reconstr. of signalling equipment of Vecsés - Albertirsa																
BL 141821.1	Signalling equipment of Albertirsa - Cegléd																
BL 142200.1	Signalling equipment of station Cegléd																

 Planned tender
  Current tender
  Settled tender
  Planned implementation
  Implementation
  Settled implementation

Simple and clear procurement structure
Budapest –Szolnok railway line reconstruction

Rehabilitation of the Budapest - Cegléd - Szolnok railway line

Journey time diagram



Saving of journey time

Clear development target concentrating on railway operation



Vecsés railway station before reconstruction



- 8km track construction (UIC60)
- 19 switches

- 3 level crossings
- 6600m² platform
- 8000m² noise barrier

- 2 underpass
- 13km catenary reconstruction

6/21/2003

Vecsés railway station after reconstruction

Infrastructure development tendency after the accession

Conditions

- EU requirements – clear, simple and transparent system
- EU support is significant part of the total railway investment possibilities (50-80 %)
- Application form, Public Procurement law, growing local approval tasks
- **EU ex post control (responsibility is on Hungarian side)**

Comparing of Investments

- **Costs, Quantity, Quality, Implementation time, sustainability (high level maintenance)**
- **Changing technical content** (railway, road or local authority investment,- requirements of service and operational companies)
- **Longer developments** (selection of projects, disposition, procurements, approval, construction)
- **Changing institutional background, payment procedure (who will decide ?)**

Successfully reconstructed Kelenföld -Tárnok railway line, open line section



Successfully reconstructed Kelenföld -Tárnok railway line, Kastélypark railway stop

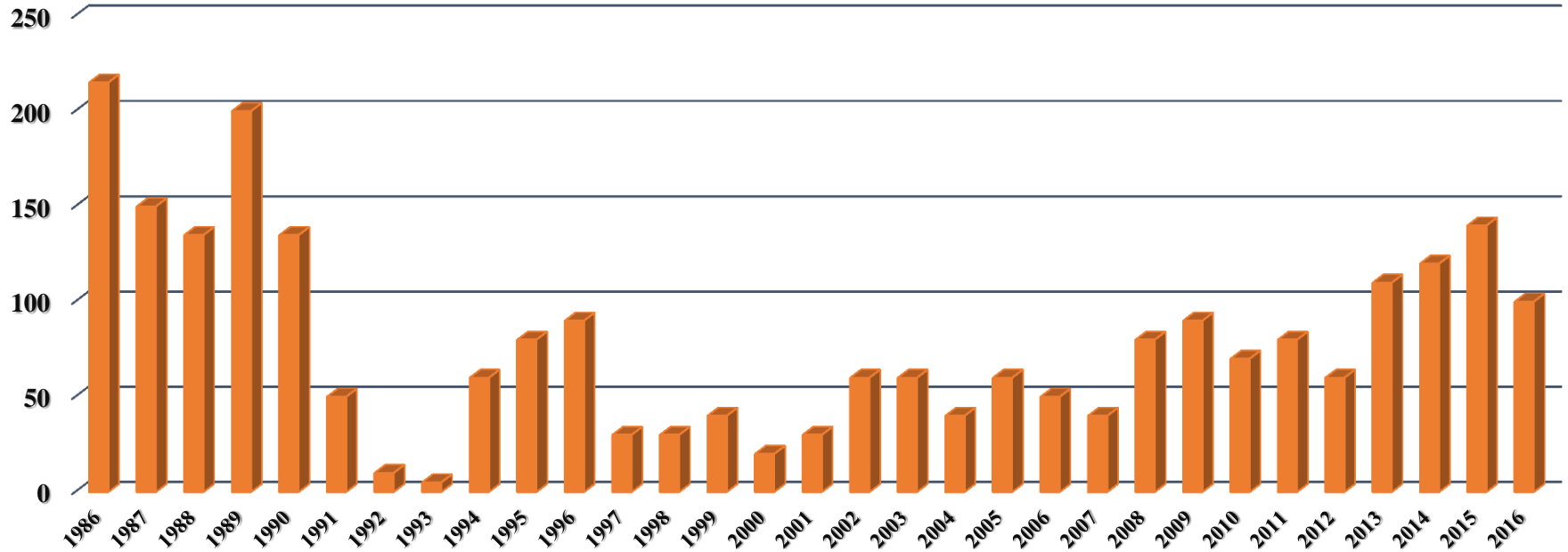


Costs of the railway station modernization what is changing ?

Station	Rounded Cost of investment, Billion Fts	Construction period	Number of reconstructed switches	Length of constructed track (trackm)
Győr station	10	2008-2010	55	15.000
Used material			8	6.000
Vác station	20	2012-2015	42	14.792
Székesfehérvár station	40	2014-2016	85	19.322
Békéscsaba station	50	2013-2016	78	23.521
Szolnok station, Debrecen station	?	?		

Railway track renewal, rehabilitation and development in the last 30 years

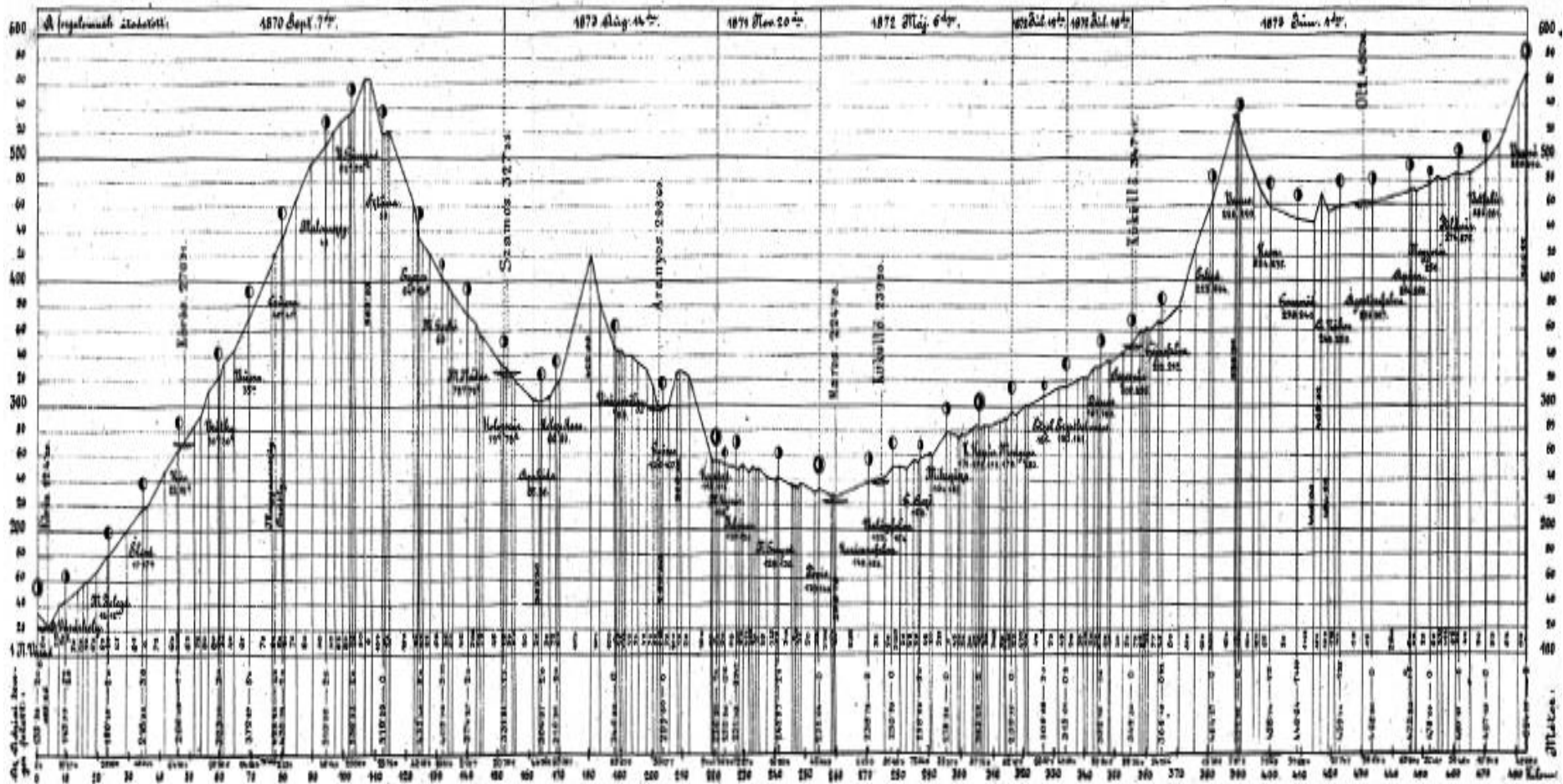
Track kilometer/year



DESIGNING AND IMPLEMENTATION OF RAILWAY INVESTMENT IN THE XIX. CENTURY in 5 year period

A MAGYAR KELETI VASÚT ÁTNÉZETI TERVE.

Fővonal: N. Vác - Brassó.



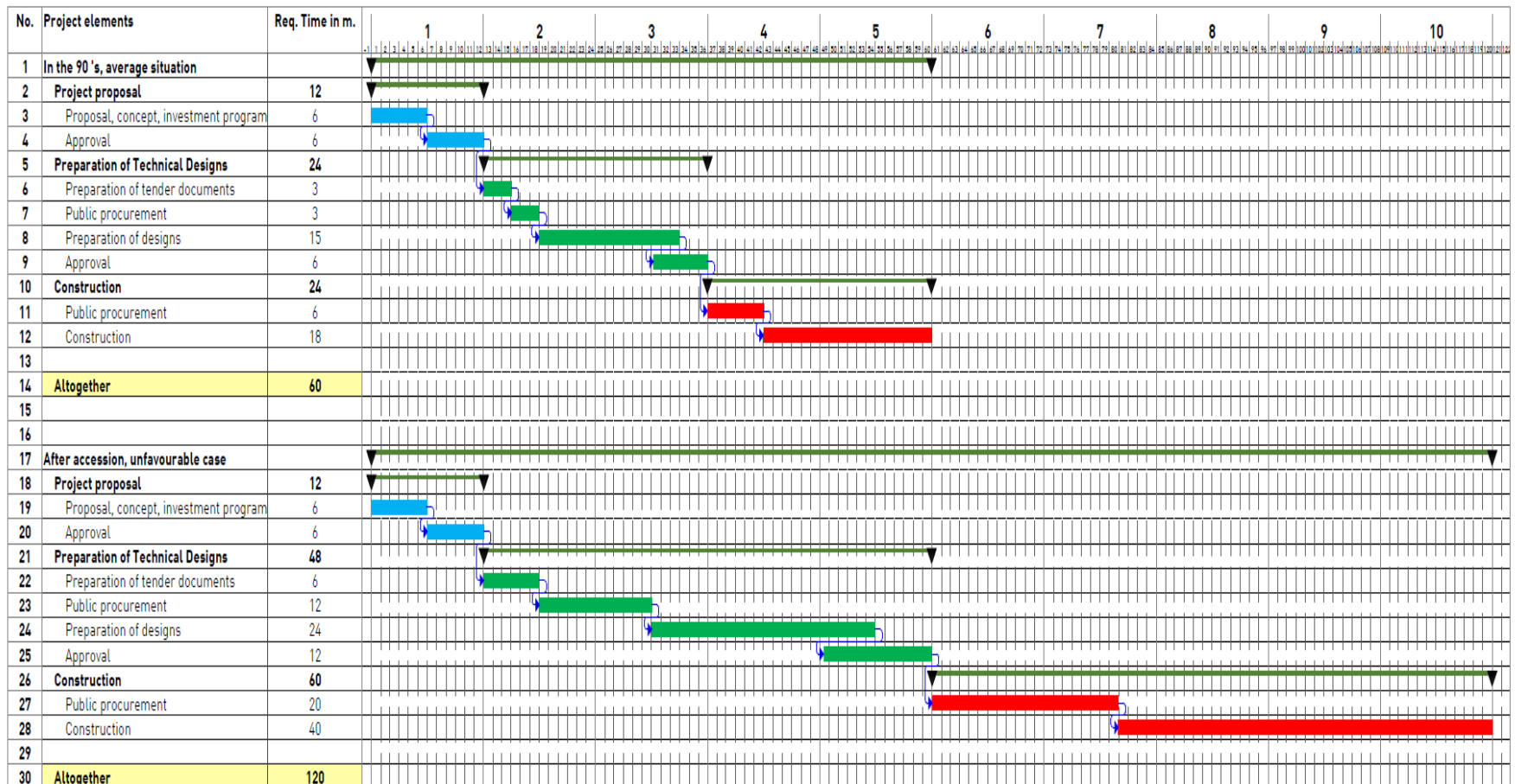
CHANGES IN PROJECT IMPLEMENTATION

LONGER PROJECT IMPLEMENTATION PERIOD



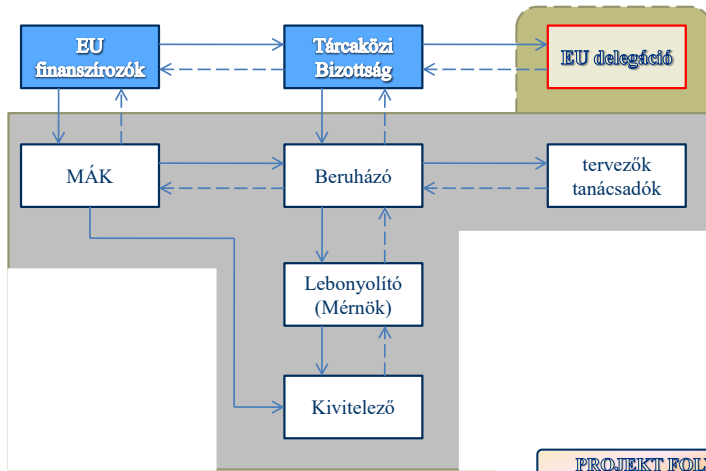
Schedule of project implementation

In the 90's, average situation & after accession, unfavourable case

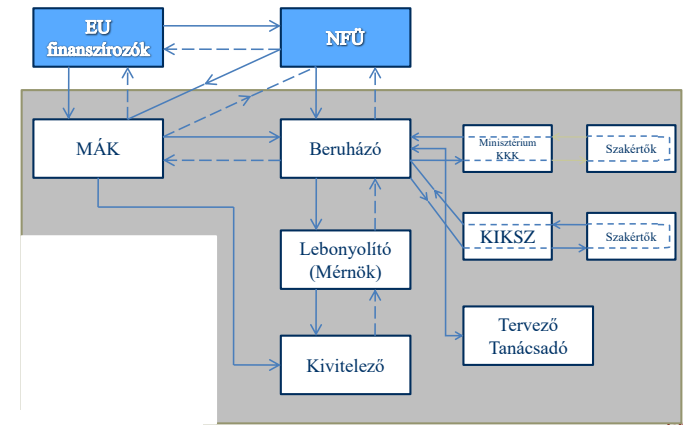


INSTITUTIONAL QUESTIONS

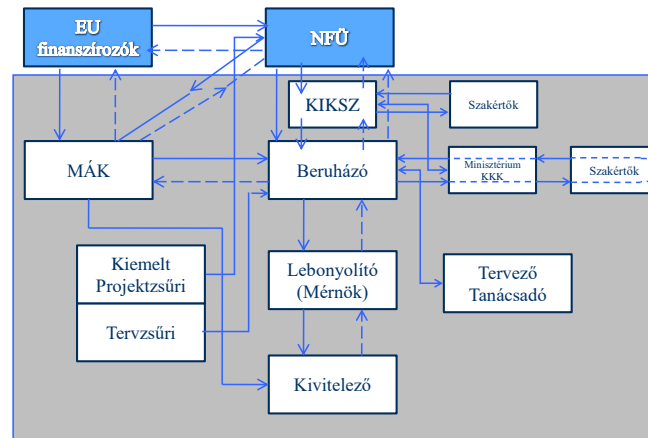
PROJEKT FOLYAMATÁBRA – EU CSATLAKOZÁS ELŐTT



PROJEKT FOLYAMATÁBRA – EU CSATLAKOZÁS UTÁN



PROJEKT FOLYAMATÁBRA – EU CSATLAKOZÁS UTÁN 2009-TŐL



Changes in Technical Designing

New challenges for the designing of the railway infrastructure

- Growing and much larger EU support as almost exclusive financial sources
(challenge and responsibility in the same time)
- Difference of Ex Ante and Ex Post Systems
- Changing of institutional system (requirement is clear, simple and transparent system)
- Project preparation is in delays
- Changing and longer designing tasks
- Local technical requirements vs TSI
- Requirement of contractor, investor (everything is required immediately).
- But... Project lifecycle is much longer

Changing and longer designing tasks

- **TSI**
- Environmental analyses and procedure is more versatile
- Public hearing, civil agreements, communications
- New or more authority agreements (eg. archeology)
- Land appropriation, lay out planning is longer
- Growing local authority requirements more difficult agreements
- Operation and service company's requirements
- EU and other requirements, prescriptions
- Growing and unforeseen administration
- Sectioning of the designing tasks (different consultants prepare the studies)
- approval and detailed designs and tender designs).
- **NOBO**

EU Certification in the railway designing, approval process

EU certification in the railway designing approval process (What will or should be certificated the final design or the designing process ?)

Railway Designing Process

- Designing task, public notice, procurement, contract
- Harmonization and finalization of designing task,
- Preparation of designs, Approval process
- **EU certification (1)**
- Closure of approval process
- Preparation of final designs, Public procurement for construction
- Construction
- **EU certification (2)**
- Take over procedure (putting into operation)

Technical specification of interoperability(TSI)

Concrete purpose of interoperability is:

- **Improving the competitiveness of rail transport**
- **Trains could run without stops and limitation through the borders**
- **TSI (Technical specifications for interoperability) mean the specifications by which each subsystem or part of subsystem is covered in order to meet the essential requirements and to ensure the interoperability of the European Community's high speed and conventional rail systems**

general main requirements are

- Safety
- Reliability and availability
- Health caring
- Environmental protection
- Technical compatibility

SET OF REQUIREMENTS THAT COULD SIGNIFICANTLY IMPROVE THE QUALITY OF FUTURE RAILWAY DEVELOPMENTS

What are the lesson learned?

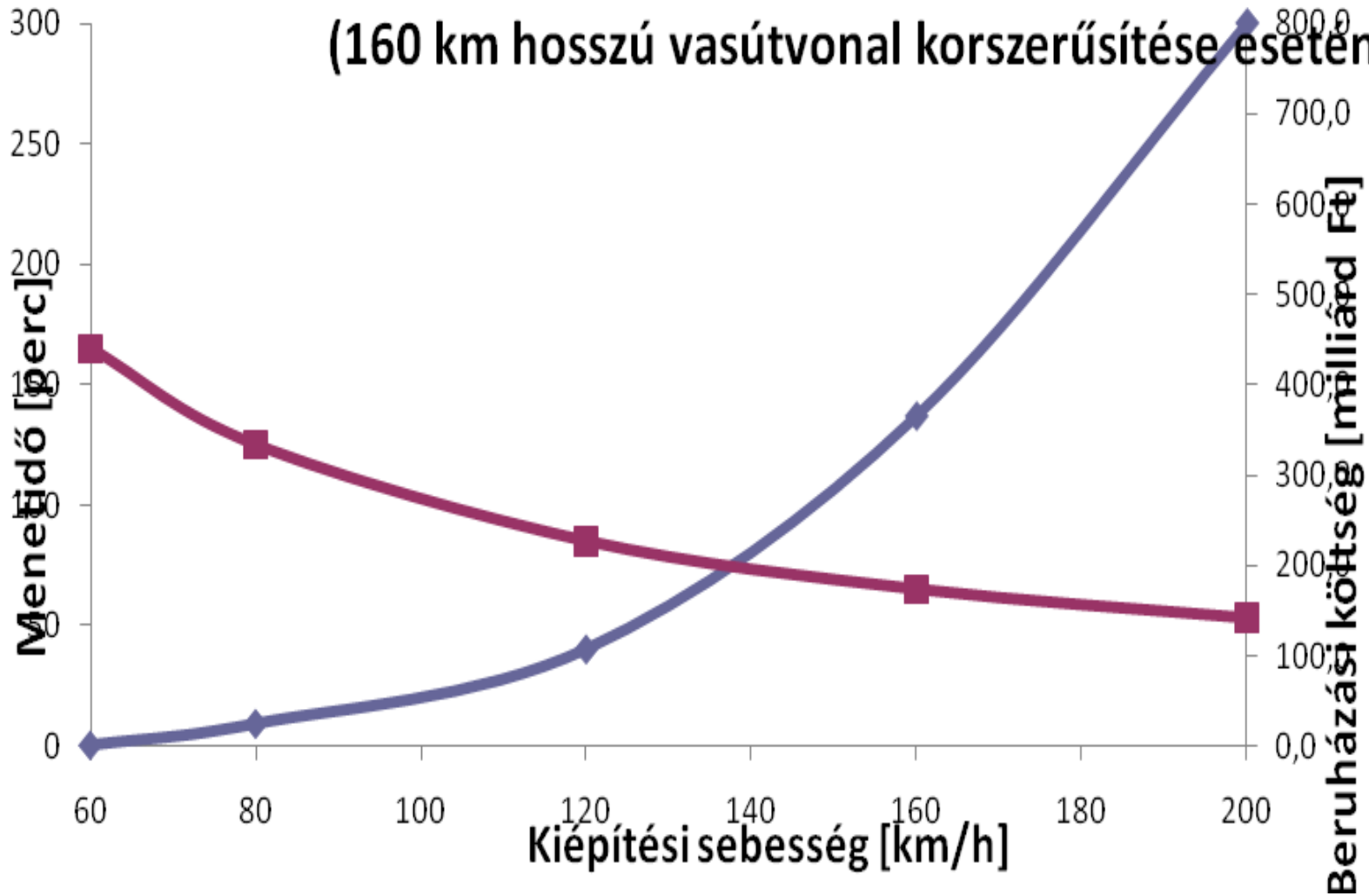
How to cope with the longer project implementation period

How to optimize Investment costs

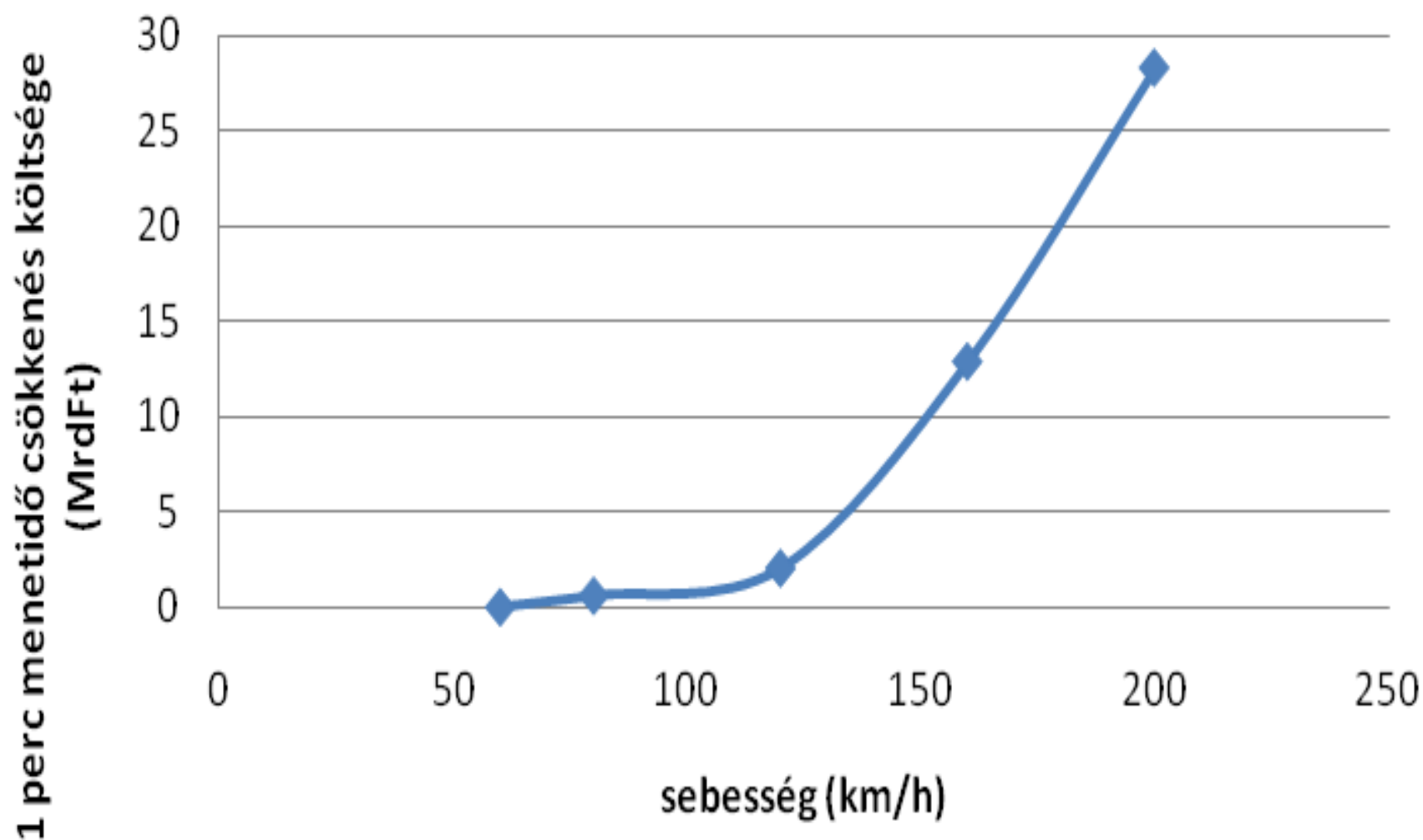
- Many successful projects, but we should improve the project preparation and implementation
- We should clearly define the technical content of the projects according to TSI
- Realistic deadlines for preparation and implementation are required
- **Well prepared, ready made projects are necessary**
- Evaluation of Life cycle costs is recommended
- We should consider the utilization of used materials
- Who will decide, it has to be clearly define (contracting authority, operational company, etc.)
- Tasks of the different control bodies have to be fine tuned
- Sustainability

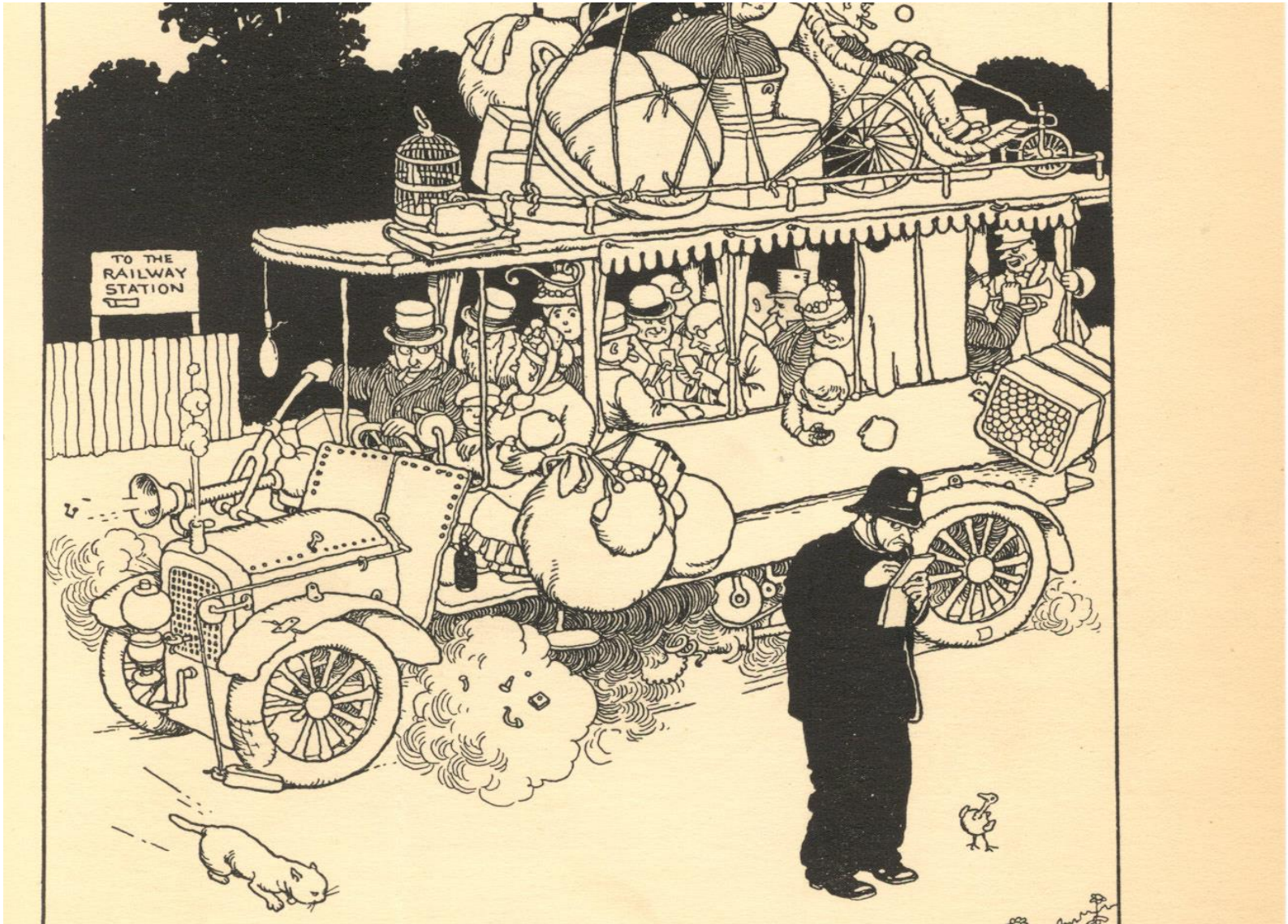
A menetidő és a beruházási költség változása a kiépítési sebesség függvényében

(160 km hosszú vasútvonal korszerűsítése esetén)



1 percnyi menetidő csökkenés beruházási költsége, sebesség függvényében





How to be competitive

Traveling time by train and by bus

	2003	2017	Csökkenés	2003 busz	2017 busz
Budapest - Debrecen	2:18	2.29	-	4.35	-
Budapest - Miskolc	1:52	1.59	-	3.15	-
Budapest - Szeged	2:26	2.22	0.04	3.00	3.00
Budapest - Pécs	2:30	2.55	-	4.00	3.20
Budapest - Győr	1:08	1.20	-	1.50	-
Budapest - Veszprém - Szombathely	3:27	3.17	0.10	4.05	4.25
Budapest - Győr - Szombathely	2:35	2.39	-	4.30	-
Budapest - Sopron	2:10	2.28	-	3.40	-
Budapest - Békéscsaba	2:31	2.20	0.11	3.45	3.40

Remark: Cyclic schedule and increased suburban traffic on all railway lines.

How to be competitive

What is required

- good, reliable Infrastructure
- excellent Rolling Stock
- Reliable Operation (cycled schedule)
- Attractive Services
- Intermodality
- Sustainability

We know that infrastructure development is only one, but important basic element of the requirements



Teamwork is necessary



Disposition

Thank You For Your Attention