

**EY tasuvusarvestuse
sotsiaalmajandusliku mõju
arvestuse vead**

5.3 Economic Analysis

Table 7 Rail Baltica socio-economic analysis results

Socio-economic performance indicators			
Net cash flow	879	M EUR	Discounted
Total revenues	703	M EUR	Discounted
Total expenses	-4 577	M EUR	Discounted
Residual value of infrastructure	172	M EUR	Discounted
Net Socio-economic benefits	4 581	M EUR	Discounted
Economic internal rate of return (EIRR)	6.32%	%	
Economic benefits to costs ratio (EBCR)	1.19	ratio	
Economic net present value (ENPV)	879	M EUR	

Projekti nüüdispuhasväärtus NPV = 879 M €

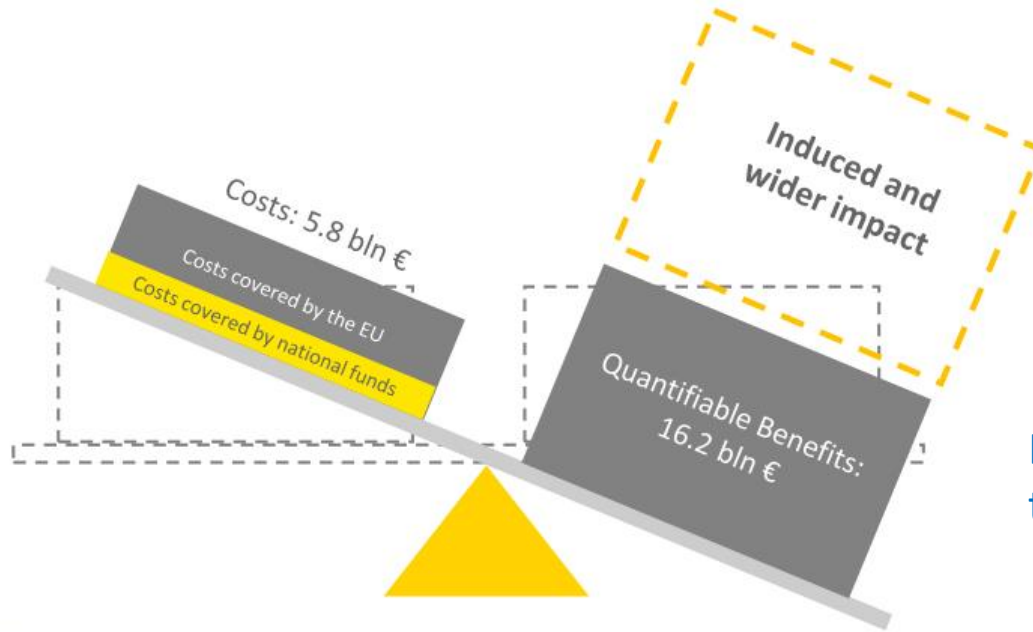
Financial cash flows with fiscal corrections			
Revenues	2 613	M EUR	Undiscounted
Revenue from infrastructure charges	2 613	M EUR	Undiscounted
Expenses	7 936	M EUR	Undiscounted
Total CAPEX*	5 183	M EUR	Undiscounted
Do-nothing CAPEX savings*	-133	M EUR	Undiscounted
Maintenance expenses*	1 921	M EUR	Undiscounted
Other expenses*	424	M EUR	Undiscounted
Investments in renewable infrastructure*	609	M EUR	Undiscounted
Do-nothing OPEX savings*	-67	M EUR	Undiscounted
Residual value of infrastructure	1 275	M EUR	Undiscounted
Socio-economic cash flows			
Net Socio-economic benefits	16 226	M EUR	Undiscounted
Air pollution reduction	3 268	M EUR	Undiscounted
Climate change mitigation benefits	3 024	M EUR	Undiscounted
Freight travel time savings	2 866	M EUR	Undiscounted
PAX travel time savings	2 410	M EUR	Undiscounted
Additional personal transport savings/expenses	2 348	M EUR	Undiscounted
Freight carrier operating profit	1 528	M EUR	Undiscounted
Safety improvement	892	M EUR	Undiscounted
Noise reduction	843	M EUR	Undiscounted
Additional freight transportation savings/expenses	374	M EUR	Undiscounted
PAX carrier operating profit	307	M EUR	Undiscounted
Bus company operating profit reduction	-7	M EUR	Undiscounted
Excise tax loss - Bus	-11	M EUR	Undiscounted
Heavy truck company operating profit reduction	-516	M EUR	Undiscounted
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* - figures represent the socio-economic cash flow (with fiscal corrections)

On undiscounted terms, the largest socio-economic benefits of the project are climate change mitigation and air pollution reduction benefits, followed by time savings and personal travel cost savings. The socio-economic analysis accounts for certain key cost items, such as the loss of excise tax revenue for the national budgets and reduced operating profits of existing transport operators.

Benefits outweigh the costs even not considering the wider benefits

Diskonteeritud
kulud kokku
4,6 mld €



Diskonteeritud
tulud kokku
5,4 mld €

Key ratios

Undiscounted B/C	2.8
Discounted B/C	1.1
Discounted Benefits/ Discounted national capital invested	5.9

Table 146 - Economic Analysis Summary

Economic Impact (€,000,000)	Rail Baltica Total		Rail Baltica Estonia		Rail Baltica Latvia		Rail Baltica Lithuania	
	Discounted Cost or Benefit	Share in Total Costs/ Benefits	Discounted Cost or Benefit	Discounted Cost or Benefit (per km of track)	Discounted Cost or Benefit	Discounted Cost or Benefit (per km of track)	Discounted Cost or Benefit	Discounted Cost or Benefit (per km of track)
Cost to Infrastructure Manager/Government								
Capital / Investment Costs	1,886	103%	565	2.47	648	2.76	674	2.55
Residual Value	-117	-6%	-34	-0.15	-43	-0.18	-41	-0.16
Maintenance Costs	61	3%	19	0.08	20	0.08	22	0.08
Benefit to Manager								
Track access charges	521	16%	108	0.47	111	0.47	125	0.47
<i>Passenger</i>	170		35	0.15	36	0.15	41	0.15
<i>Freight</i>	351		73	0.32	75	0.32	84	0.32
Benefit to Operator								
Passenger Operator								
Operating costs <i>(including track access charges)</i>	-372	-12%	-77	-0.34	-79	-0.34	-89	-0.34
Revenues	605	19%	129	0.56	160	0.68	215	0.81
Freight Operator								
Operating costs <i>(including track access charges)</i>	-685	-21%	-142	-0.62	-146	-0.62	-164	-0.62
Revenues	1,142	36%	353	1.54	339	1.44	322	1.22
Benefit to Users								
Value of Time Savings	1,158	36%	397	1.73	340	1.45	284	1.08
<i>Passenger</i>	340		135	0.59	88	0.38	71	0.27
<i>Freight</i>	818		262	1.14	252	1.07	213	0.81
External Impacts								
On Safety (Accidents)	338	11%	116	0.51	105	0.44	89	0.34
Air Pollution	148	5%	35	0.15	29	0.13	77	0.29
Climate Change	342	11%	117	0.51	108	0.46	85	0.32
Total Costs	1,829		550	2.41	625	2.66	654	2.48
Total Benefits	3,198		1,034	4.52	967	4.11	944	3.58
Net Present Value (NPV)			484		342		289	
EIRR			9.7%		8.4%		7.9%	
Benefit/Cost Ratio			1.88		1.55		1.44	

Climate Change	342	11%
Total Costs	1,829	
Total Benefits	3,198	
Net Present Value (NPV)	1,368	
EIRR	9.3%	
Benefit/Cost Ratio	1.75	

Projekti nüüdispuhasväärtus
NPV = 1 368 mln €

Vigade summa (mln €)

	Diskonteerimata	NPV
Aktiisiarvestuse vale protsent	-220	-65
Aktiiside kasv SKP järgi	-930	-260
Autode saastamine	-2957	-840
KOKKU	-4107	-1165

RB NPV: 879 mln€ - 1165 mln€ = -286 mln€

Aktiisi laekumise vähenemine

Excise tax loss - Heavy truck

-1 098

M EUR

Autovedaja ühe veoauto km hind: 0.8 €

Heavy truck EBIT margin: 6%

*Heavy truck fuel % of OPEX: 25%
(EY lk 147)*

$$0.8 \text{ € / km} * 0.94 * 0.25 = 0.19 \text{ € / km}$$

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Aktsiisi laekumise vähenemine

Excise tax Average assumed pan-Baltic excise tax is 44.8%

$0.19 \text{ €} * 0,448 = 8.4 \text{ senti/ km}$ kohta aktsiisi laekumist

$6 \text{ mld t km} / 13,7 \text{ t} = 437 \text{ mln}$ veoki kilomeetrit

$0.084 \text{ € / km} * 437 \text{ mln km / aastas} = 36.8 \text{ mln / aastas}$

$30 \text{ aastat} * 36.8 \text{ mln / aastas} = 1100 \text{ mln}$

Excise tax loss - Heavy truck	-1 098	M EUR	Undiscounted
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Aktiisi laekumise vähenemine

Low mileage (miles p.a.)	Fuel costs as a percentage of total cost of vehicle and driver	Average mileage (miles p.a.)	Fuel costs as a percentage of total cost of vehicle and driver	High mileage (miles p.a.)	Fuel costs as a percentage of total cost of vehicle and driver
7.5t rigid	30,000	17	40,000	18	50,000
10 - 12t rigid	42,500	22	50,000	22	60,000
12 - 14t rigid	35,000	20	40,000	19	50,000
16 - 18t rigid	50,000	26	60,000	25	70,000
26t rigid	50,000	27	60,000	26	70,000
32t rigid	50,000	29	55,000	27	65,000
33t (2+2) artic	60,000	30	75,000	30	85,000
38t (2+3) artic	65,000	30	75,000	30	85,000
38t (3+2) artic	50,000	28	70,000	29	85,000
32.5t drawbar	45,000	25	60,000	27	80,000
40t (2+3) artic	50,000	27	70,000	29	80,000
44t (3+3) artic	70,000	32	85,000	31	100,000



Aktiisi laekumise vähenemine

- Kütusekulu OPEX-s 25% -> 30% (+20%)

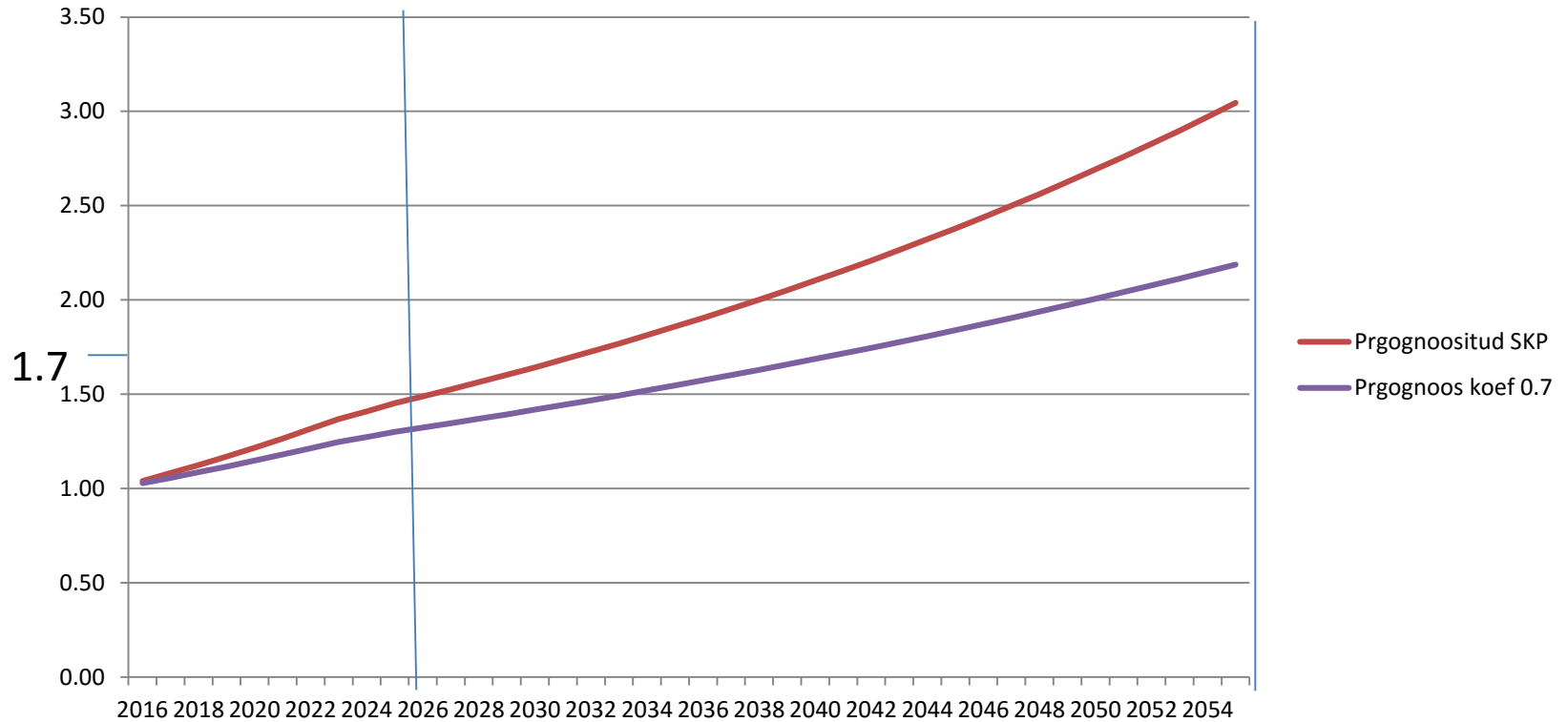
=> 19 senti/km +20% = 24 senti/km

Aktiisilaekumise vähenemine (+20%) 1320 mln €

1320 mln € - 1098 € (EY) = **222 mln €**

-65 mln € NPV

SKP kasvu prognoos



Aktiisi laekumise vähenemine

- $1\,098 \text{ mln } \text{€} * 1,2 * 1,7 = 2\,240 \text{ mln } \text{€}$
- $2\,240 \text{ mln } \text{€} - (1,2 * 1098 \text{ mln } \text{€}) = 922 \text{ mln } \text{€}$
– **260 mln € NPV**

Aktsiisi laekumise vähenemine

- Sõiduautodel aastas:
- $1000 \text{ mln PAX km} * 85\% : 1.45 \text{ PAX / auto} = 586 \text{ mln km}$
- *Aktsiismäär keskmiselt 0.37 eurot / liitrilt*
- $586 \text{ mln km} * 0.05 \text{ l /km} * 0.37 \text{ eurot / liitrilt} =$
11 mln

Autode saastamise mõju vaeleinvestus

Air pollution assumptions

The following assumptions (in 2015 prices) have been used:¹⁵³

	EUR/vkm							EUR per LTO*
	Intercity bus	City bus	Car	Heavy truck	Diesel freight train	Freight /PAX train	Air	Air
Within city	0.20	0.18	0.02	0.22	3.77	0	0.17	87.86
Outside city	0.09	0.08	0.01	0.10	1.50	0		

*Landing and take-off

It is assumed that these costs would grow together with the forecasted real growth of average pan-Baltic GDP per capita. Based on the CBA methodology¹⁵⁴, a coefficient of 0.7 is applied to these growth rates.

Autode saastamise mõju vaeleinvestus

		EURO VI	2.0	0.9	0.5	0.4
	34 - 40 t	EURO 0	40.9	26.3	18.1	14.8
		EURO I	31.1	18.9	12.7	10.4
		EURO II	24.7	17.7	12.7	10.4
		EURO III	20.5	14.4	10.2	8.3
		EURO IV	11.2	9.0	6.9	5.6
		EURO V	8.5	6.2	3.4	2.3
		EURO VI	2.1	0.9	0.5	0.4

Vehicle	Category	EURO-Class	Urban €/vkm	Suburban €/vkm	Rural €/vkm	Motorway €/vkm
Articulated HGV	14 - 20 t	EURO 0	28.5	17.6	12.5	11.0
		EURO I	17.9	10.7	7.5	6.6
		EURO II	14.4	10.3	7.7	6.8
		EURO III	12.6	8.6	6.1	5.3
		EURO IV	7.2	5.5	4.2	3.7
		EURO V	6.8	5.1	2.7	1.6
	EURO VI	2.0	0.9	0.4	0.3	
	20 - 28 t	EURO 0	32.2	20.4	14.4	12.0
		EURO I	24.4	14.8	10.2	8.6
		EURO II	19.4	13.8	10.1	8.6
		EURO III	16.4	11.4	8.1	6.7
		EURO IV	9.2	7.2	5.5	4.6
		EURO V	7.8	5.8	3.0	2.0
	EURO VI	2.0	0.9	0.4	0.4	
	28 - 34 t	EURO 0	34.7	22.2	15.5	12.8
		EURO I	26.2	16.0	10.9	9.0
		EURO II	20.8	14.9	10.7	9.0
		EURO III	17.4	12.2	8.6	7.0
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	34 - 40 t	EURO 0	40.9	26.3	18.1	14.8
		EURO I	31.1	18.9	12.7	10.4
		EURO II	24.7	17.7	12.7	10.4
EURO III		20.5	14.4	10.2	8.3	
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EURO V		8.5	6.2	3.4	2.3	
EURO VI	2.1	0.9	0.5	0.4		
40 - 50 t	EURO 0	46.5	30.2	21.0	17.1	
	EURO I	35.4	21.7	14.7	11.7	
	EURO II	28.0	20.1	14.5	11.8	
	EURO III	23.0	16.4	11.6	9.3	
	EURO IV	12.5	10.3	7.9	6.3	
	EURO V	8.5	6.1	3.5	2.5	
EURO VI	2.1	0.9	0.5	0.5		
50 - 60 t	EURO 0	56.6	37.2	25.9	20.2	
	EURO I	43.1	26.6	17.9	14.0	
	EURO II	33.9	24.5	17.5	14.1	
	EURO III	27.4	19.7	14.1	10.9	
	EURO IV	15.1	12.6	9.5	7.5	
	EURO V	9.4	6.7	4.1	3.0	
EURO VI	2.2	1.0	0.6	0.6		

Source: own calculations based on COPERT 4 emission factors. Damage cost factors from Table 15.

Autode saastamise mõju valearvestus

Table 90 Air pollution reduction by source

Air pollution reduction	% of total	Effect, M EUR	Total, M EUR
Bus	0.412%	13.5	3 268
Car	7.092%	231.8	
Existing Train	0.002%	0.1	
Air	3.935%	128.6	
Heavy truck	88.559%	2 894.4	
Rail Baltica	0.000%	0.0	

- $2894 \text{ mln} : 23.5 = 123 \text{ mln}$
- EY arvestustega võrreldes väheneb sotsiaalmajanduslik mõju $2894 \text{ mln} - 123 \text{ mln} = 2771 \text{ mln}$

Autode saastamise mõju vaeleinvestus

- Sõiduautod:
- $231.8 \text{ mln } \text{€} : 5 = 46 \text{ mln } \text{€}$
- Vahe:
 $46 \text{ mln } \text{€} - 232 \text{ mln } \text{€ (EY)} = - 186 \text{ mln } \text{€}$

Kokku $2771 \text{ mln } \text{€} + 186 \text{ mln } \text{€} = 2957 \text{ mln } \text{€}$

-840 mln € NPV

Esitatud vigade kokkuvõte (mln €)

	Diskonteerimata	NPV
Aktiisiarvestuse vale protsent	-220	-65
Aktiiside kasv SKP järgi	-930	-260
Autode saastamine	-2957	-840
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