SEA application in transport sector – case examples from Slovakia

Moscow, Russia

Martin Smutny, 25 October 2016

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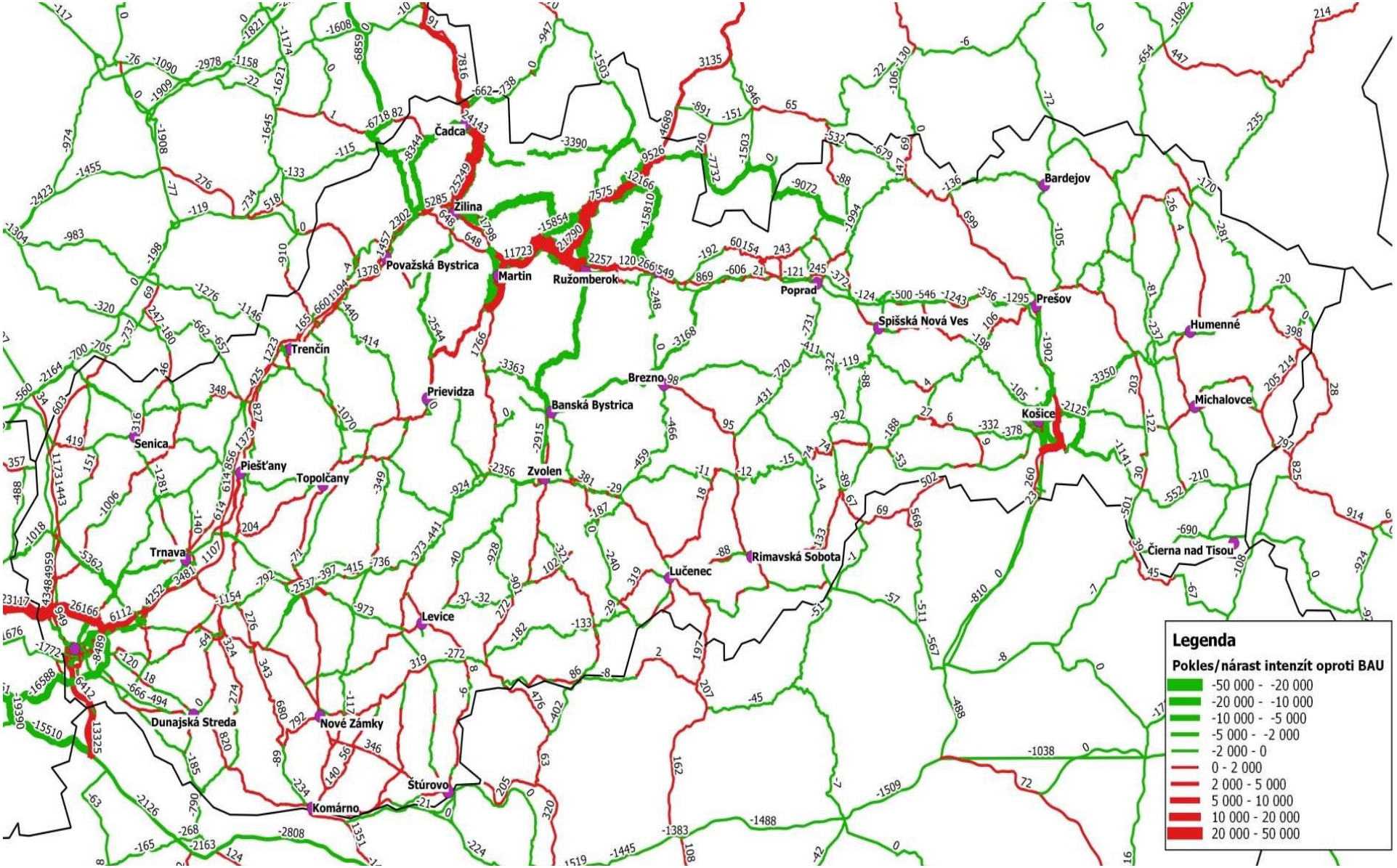
Case example 1: SEA of the National Transport Development Strategic Plan until 2030, Slovakia

Background information

- Strategic plan is a long-term planning document as a basis for EU co-funding of the transport projects
- Measures proposed for following transport modes
  - Roads
  - Railways
  - Air transport
  - Water transport
  - Public and non-motorized transport
- Road transport model: information on present and future traffic intensities on the road network and their changes in case implementing individual investments
- Outlined road and railway corridors (however not precisely spatially determined)


Čadca
Žilina
Považská Bystrica
Martin
Ružomberok
Poprad
Bardejov
Prešov
Spišská Nová Ves
Humenné
Michalovce
Košice
Trenčín
Prievidza
Brezno
Banská Bystrica
Senica
Piešťany
Topoľčany
Zvolen
Trnava
Rimavská Sobota
Lučenec
Čierna nad Tisou
Levice
Dunajská Streda
Nové Zámky
Štúrovo
Komárno
Legenda
Pokles/nárast intenzít oproti BAU
-50 000 - -20 000
-20 000 - -10 000
-10 000 - -5 000
-5 000 - -2 000
-2 000 - 0
0 - 2 000
2 000 - 5 000
5 000 - 10 000
10 000 - 20 000
20 000 - 50 000

SEA approach

- Qualitative assessment
  - Socio-economic aspects (e.g. employment, livelihood, active lifestyle and related health issues), water resources, biodiversity and nature protection, cultural heritage

- Quantitative analyses
  - GHGs emissions
  - Air quality
  - Noise

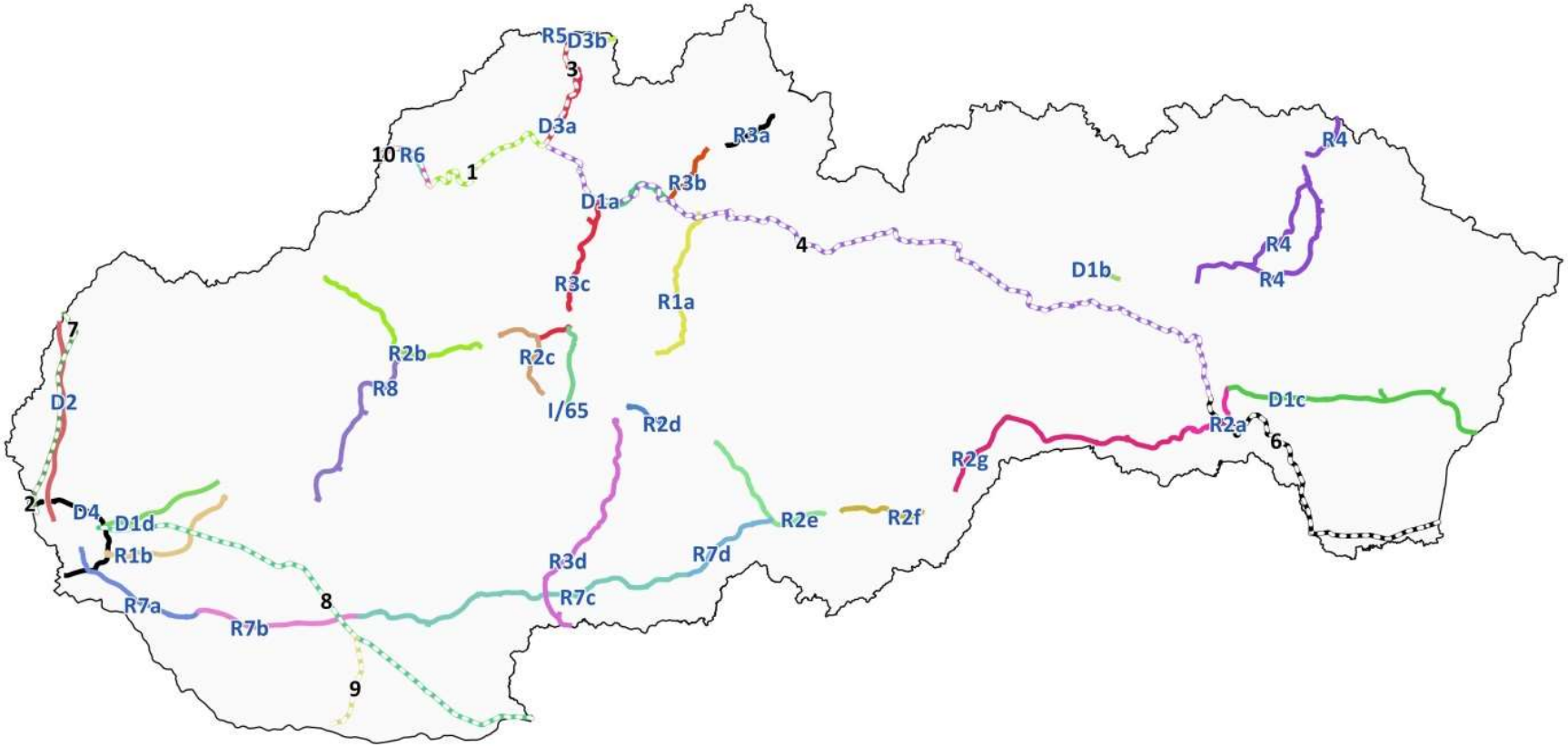
- Spatial analyses
  - Air quality
  - Noise
  - Biodiversity and nature protection
  - Climate change risks
  - Cultural heritage

Initial analysis

Kategória opatrenia	ID opatrenia	Ovzdušie	Emisie skleníkový ch plynov	Hluk a vibrácie	Obyvateľst vo a zdravie	Príroda a krajina	Povrchové a podzemné vody	Klimatické riziká	Horninové prostredie a nerastné suroviny	Pôdy	Kultúrne dedičstvo	Odpady
Systémové opatrenia	OPS1	0	0	0	0	0	0	0	0	0	0	0
	OPS2	0	0	+	0	0	+/-	+	0	0	0	0
	OPS3	0	0	0	0	0	0	+	-	-	0	0
	OPS4	0	0	0	0	0	0	+	0	0	0	0
	OPS5	+	+	+	0	0	0	0	0	0	0	0
	OPS6	+	+	+	0	0	+	+	0	0	0	0
	OPS7	+	++	++	+	0	+	+	+	+	+	+
	OPS8	0	0	0	+	0	+	++	0	0	0	0
Cestná doprava	OPC1	+	+	+	+/-	0	+/-	+	0	-	0	0
	OPC2	+	0	+	0	0	+	+	0	0	0	0
	OPC3	0	0	-	+	-	+/-	0	-	-	0	0
	OPC4	0	0	+	0	0	0	+	0	-	0	0
	OPC5	++	+/-	+	+	--	+/-	+/-	-	-	0	0
	OPC6	+	+/-	+	+/-	--	-	+/-	-	-	0	0
	OPC7	++	+/-	+	+	--	-	+/-	-	-	0	0
	OPC8	+	+/-	+	+	--	-	+/-	--	--	0	0
	OPC9	+	+/-	+	+	--	-	+/-	-	-	0	0
	OPC10	+/-	-	+/-	+	--	-	+/-	--	--	0	0
	OPC11	++	-	-	+	--	-	+/-	0	0	0	0
	OPC12	+/-	-	+/-	+	--	-	+/-	--	--	0	0
Železničná doprava	OPŽ1	+	+	+/-	-/+	--	+/-	+/-	-	-	0	0
	OPŽ2	+	+	+/-	+	0	0	+	0	0	0	0
	OPŽ3	+	+	+/-	0	0	0	0	0	0	0	0
	OPŽ4	+	+	+/-	-/+	-	0	+/-	-	-	0	0
	OPŽ5	0	0	+/-	-/+	-	0	+/-	--	--	0	0
	OPŽ6	+	+	+/-	+	-	0	+/-	0	0	0	0
	OPŽ7	+	+	-	+	-	0	+/-	0	0	0	0
	OPŽ8	+	+	+/-	-/+	-	0	+/-	-	-	0	0
	OPŽ9	++	++	+	+	-	+	+/-	0	0	0	0
	OPŽ10	0	+	+	0	0	0	+/-	0	0	0	0
	OPŽ11	0	++	+/-	0	0	0	+/-	0	0	0	0
Vodná doprava	OPV1	0	0	-	+/-	--	--	-	0	0	0	0
	OPV2	0	0	0	0	0	+	0	0	0	0	0
	OPV3	0	0	+/-	+	-	--	+/-	0	0	0	0
	OPV4	0	0	0	0	0	0	0	0	0	0	0
	OPV5	0	0	0	0	-	0	+/-	0	0	0	0
Letecká doprava	OPL1	0	+/-	+/-	+/-	0	0	0	0	0	0	0
	OPL2	-	-	-	0	-	-	0	0	0	0	0
Verejná osobná doprava	OPVO1	++	++	+	++	0	0	+	0	0	0	0
	OPVO2	+	+	+	+	0	0	+	0	0	0	0
	OPVO3	++	++	++	+	0	+	0	0	0	0	0
	OPV04	+	++	++	++	-	0	+	0	0	+	+
	OPVO5	+	++	+	+	-	+/-	+	0	0	0	0
	OPVO6	0	+	0	++	0	0	0	0	0	0	0
	OPVO7	+	++	+	+	-	0	+	0	0	0	0
	OPVO8	++	++	+	+	-	0	+	0	0	0	0

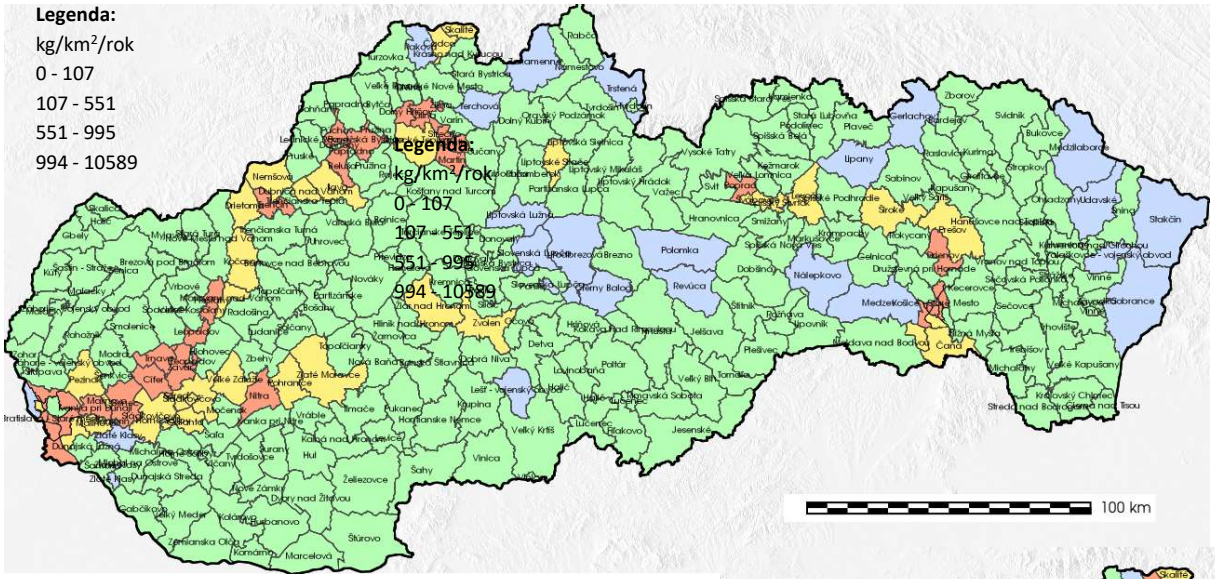
- Analysis of linkages between Plan's measures and the key environmental and health issues
- Based on preliminary baseline analysis
- **Identification of potential risks and Plan's elements to be assessed in detail**

Orientačné schéma zvažovaných infraštruktúrných opatrení s potenciálne významnými vplyvmi na životné prostredie na národnej úrovni

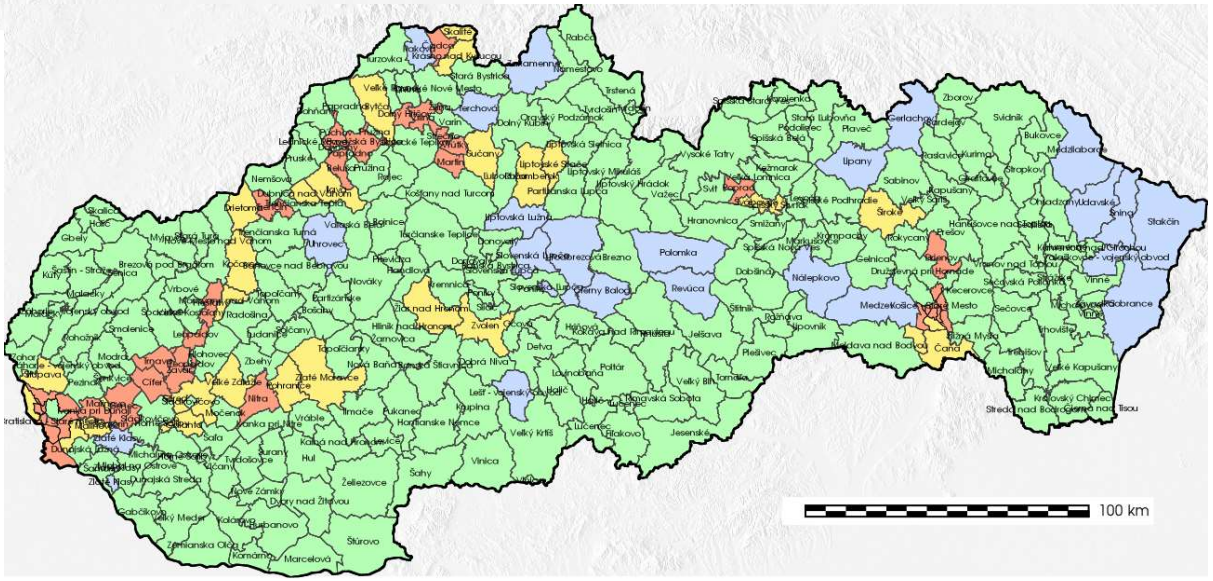


Zostavil: Integra Consulting s.r.o. (2016)

Air

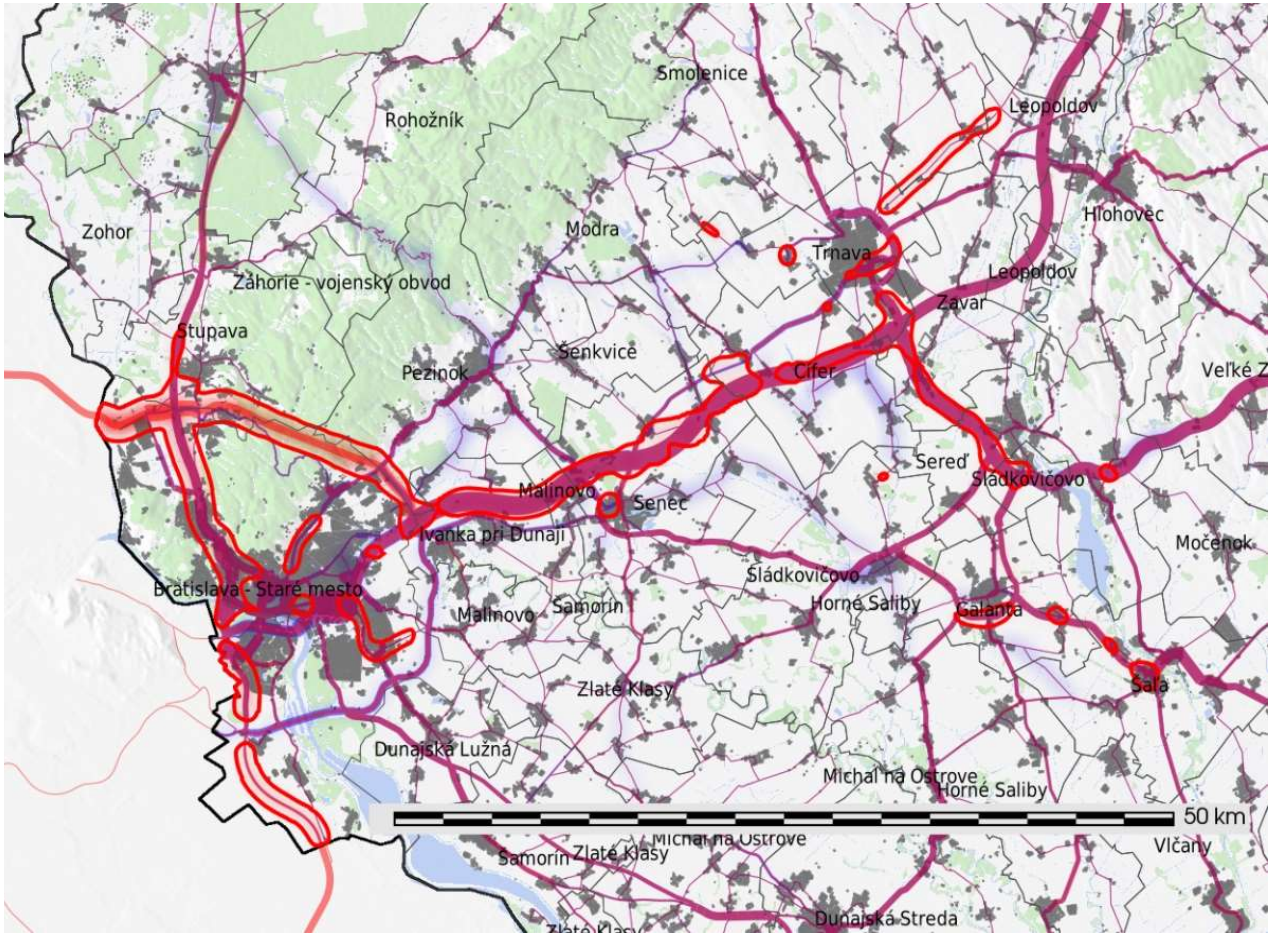


Emissions of PM10 – BAU scenario (2030)



Emissions of PM10 – with Plan's measures (2030)

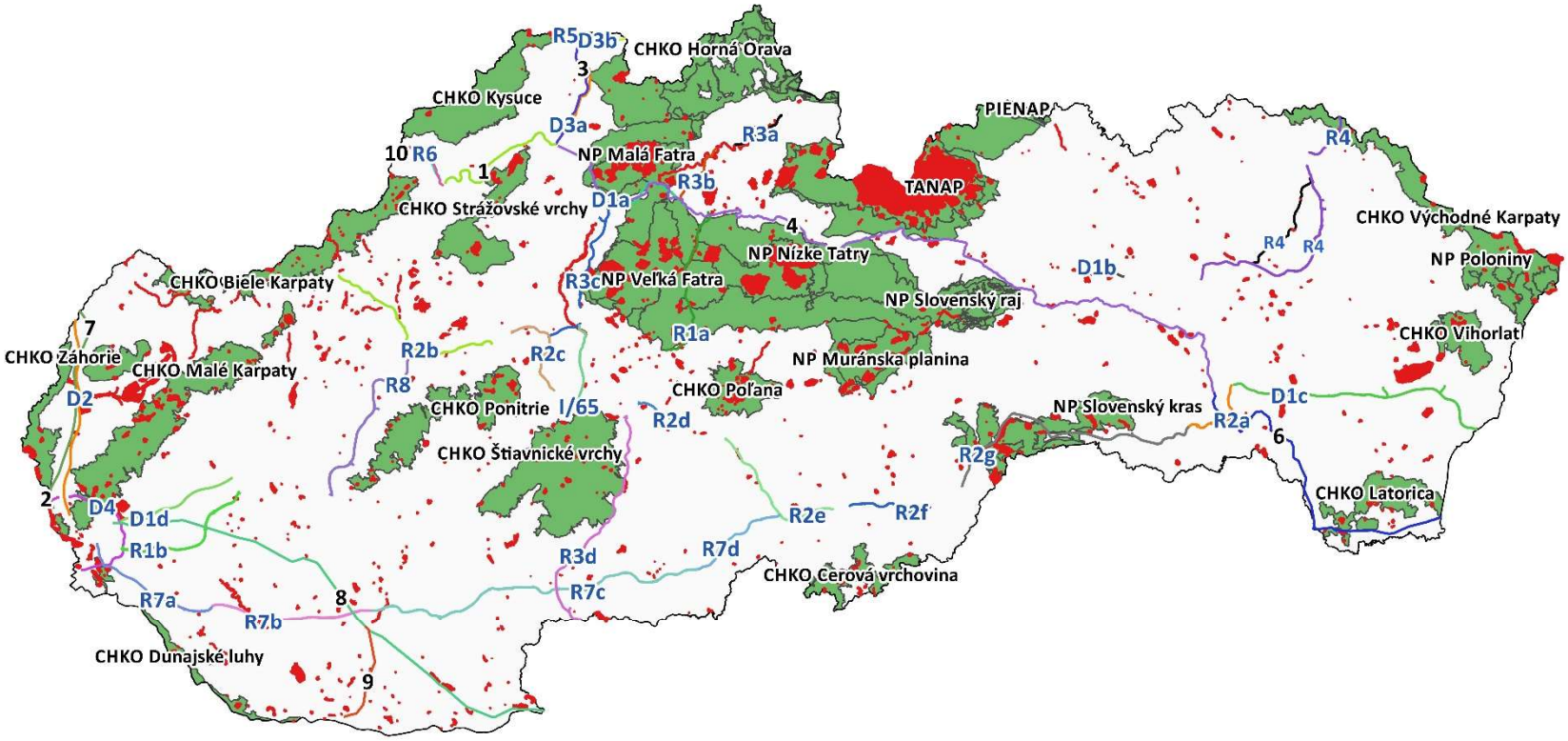
Air



Emissions of PM10 – detailed analysis of critical area (2030)

Biodiversity and nature protection

Identifikácia potenciálnych konfliktov koridorov dopravnej infraštruktúry
s chránenými územiami



Zdroj dát: SOPSR (2016)
Zostavil: Integra Consulting s.r.o. (2016)

Hodnotené dopravné koridory

Veľkoplošné chránené územia
Maloplošné chránené územia

Biodiversity and nature protection

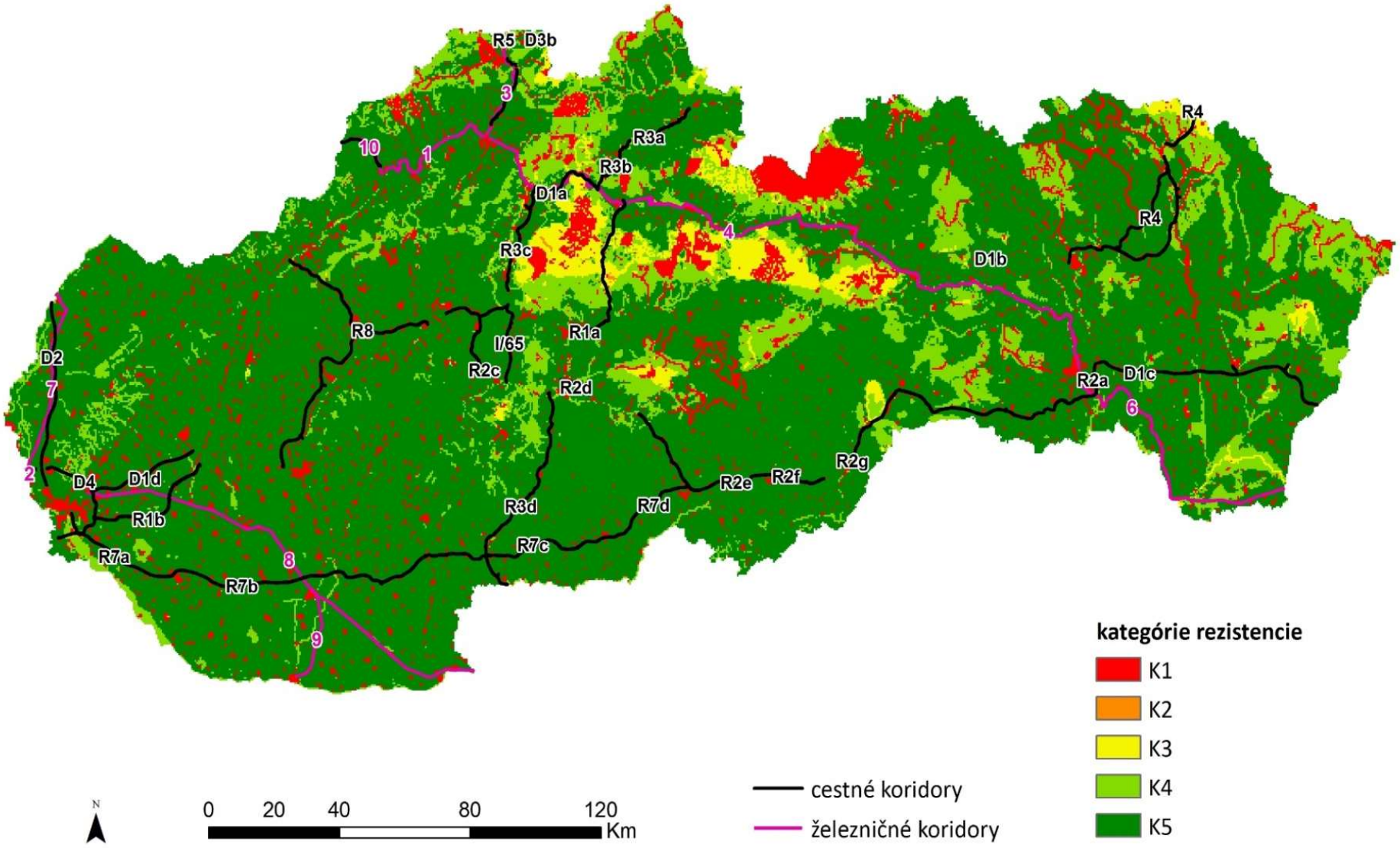
- Initial GIS analysis followed by detailed description of likely affects in critical locations e.g.:

- Section R7:
  - Direct spatial conflict with two protected areas,
  - Protected area 1: Proposed corridor will cause fragmentation of the areas, in cumulation with subsequent section likely significant adverse impacts
  - Protected area 2: Depending on detailed routing significant impacts can be avoided

Synthesis of spatial analyses

- Identification of critical areas considering environmental and health risks and limitations
- Determination of ‘resistance’/’ of the territory for transport infrastructure projects

- Based on spatial analyses, the country territory was divided in five categories:
  - K1: extremely sensitive, fully ‘resistant’ for transport infrastructure
  - K2: highly sensitive, can be used only in exceptional cases with implementation of extensive mitigation measures
  - K3: sensitive, potential conflicts, however these can be avoided through alternative options
  - K4: less sensitive, low ‘resistance’ to transport infrastructure
  - K5: non-sensitive, free for transport infrastructure development


R5
D3b
3
10
1
R3a
R3b
D1a
4
R4
R4
R3c
D1b
R8
R1a
I/65
R2c
R2d
D2
7
R2a
D1c
6
2
D4
D1d
R2g
R2e
R2f
R3d
R7d
R1b
R7c
R7a
8
R7b
9
kategórie rezistencie
K1
K2
K3
K4
K5
cestné koridory
železničné koridory
N
0
20
40
80
120
Km

Conclusions regarding likely effects

- Implementation of the Plan will increase emissions to the air, however mainly in less populated areas
- Proposed Plan shall result in less GHGs emissions compare to BAU scenario, however in total it will increase GHGs emissions
- Likely overall positive effects to livelihood and human health with the risk of localized negative impacts in critical areas
- Likely negative effects on biodiversity, nature protection, and landscape – risk of cumulative impacts with other anthropogenic factors

Examples of mitigation measures proposed by SEA

- Two levels
  - To be considered in the Plan
  - To be considered in follow-up planning

- Ensure better air quality monitoring in selected critical areas
- Examine spatial alternatives of selected road sections with routing further from inhabited areas
- To include further measures supporting alternative fuels
- Prepare dedicated study on migratory corridors of large predators as a basis for detailed planning of road corridors

SEA results

- Certain measures proposed by SEA shall be included in the plan
- Actions shall be undertaken to enhance air quality monitoring

- Guidance for further development of transport infrastructure projects
  - Identification of risks
  - Recommendations for project level assessment (EIA)
  - Synthesis of spatial analysis provides a basis for prioritisation of transport infrastructure projects

Case example 2: SEA for Transport Strategy of Kosice City, Slovakia

Background information

Strategy was elaborated in two levels

- **Strategic** i.e. priorities for further transport development (mainly focused on public transport)
- **Project** i.e. indication of priority activities and projects to be implemented (e.g. new tram lines, road sections etc.)

SEA was conducted in parallel with Strategy preparation

Key aspects addressed in SEA

- Air quality
- Human health (air quality, noise, road safety)
- Biodiversity and nature protection

Approach to impact assessment – air quality

- Transport model available i.e. expected transport intensities in 2030 with and without the Strategy

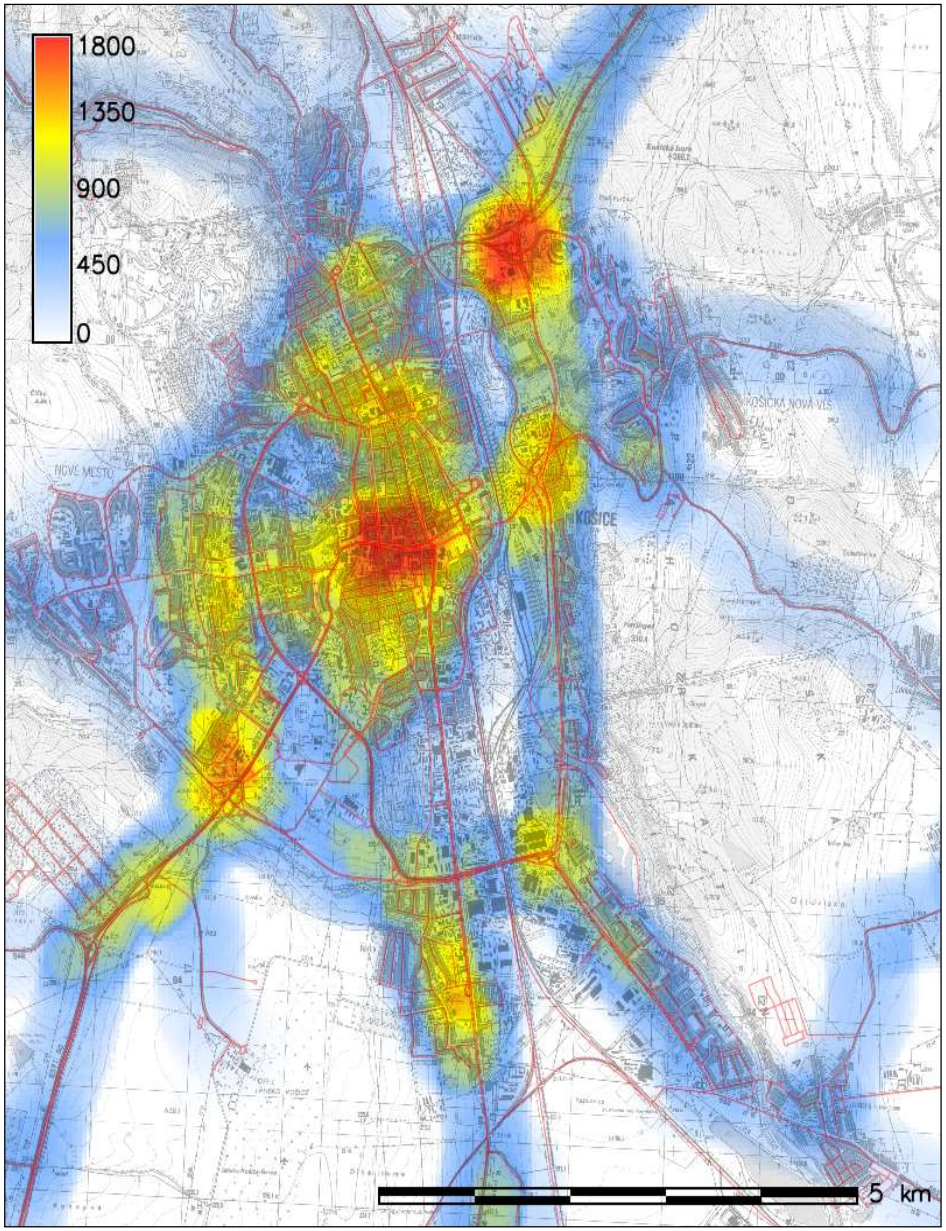
- Emissions of NO_x, PM_{10}, $PM_{2.5}$, and PAH from transport were calculated and compared for both scenarios

- Results were displayed in the maps and linked to population density i.e. for how many inhabitants the emissions of air pollutants will change

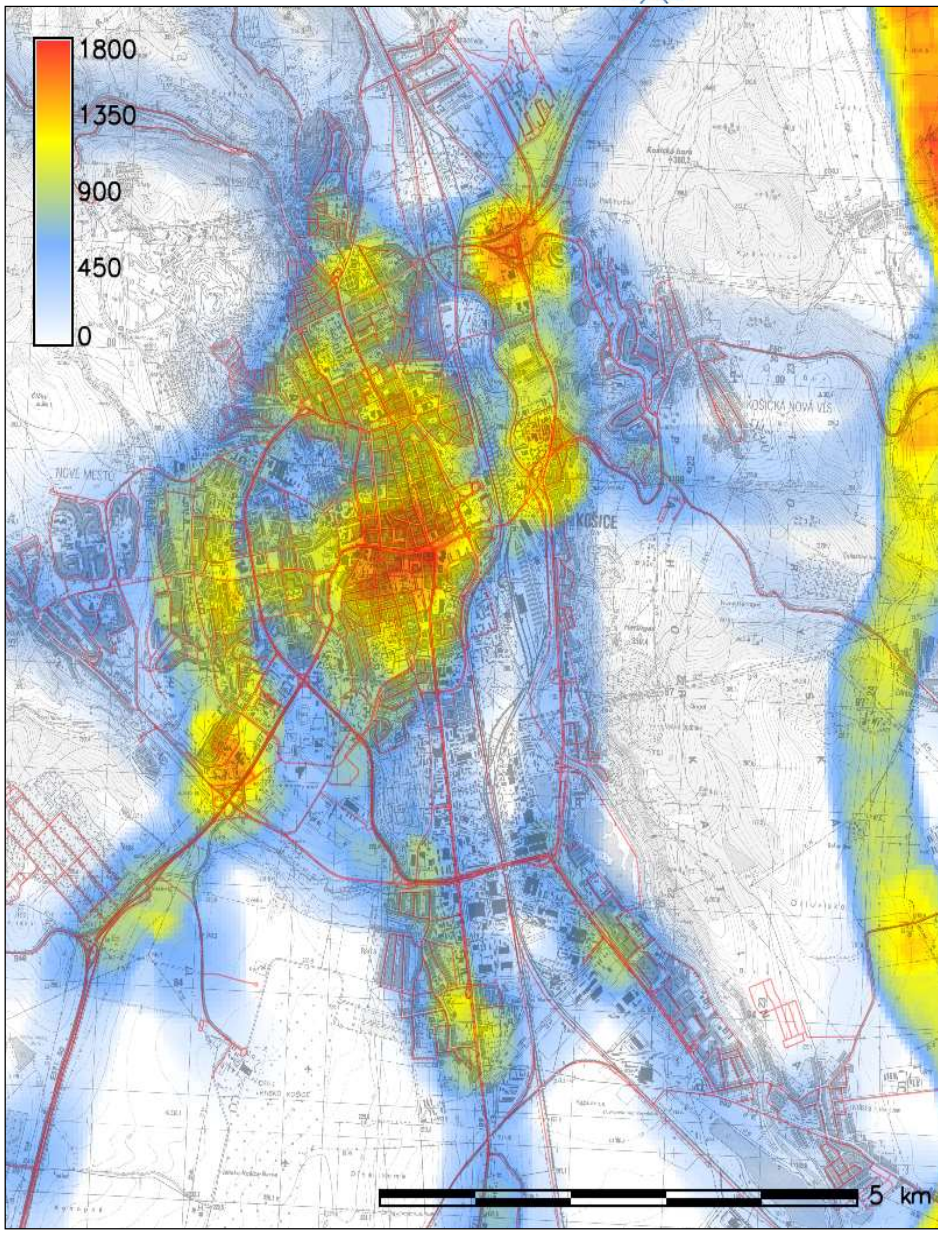
Approach to impact assessment – air quality

Scenario	NO_x	NO_2	PM_{10}	$PM_{2,5}$	B(a)P
	t/year	t/year	t/year	t/year	g/year
Zero	785	194	374	120	715
Active	646	163	375	116	609
Difference	-139	-31	1	-5	-106
	-18%	-16%	0,3%	-3,8%	-15%

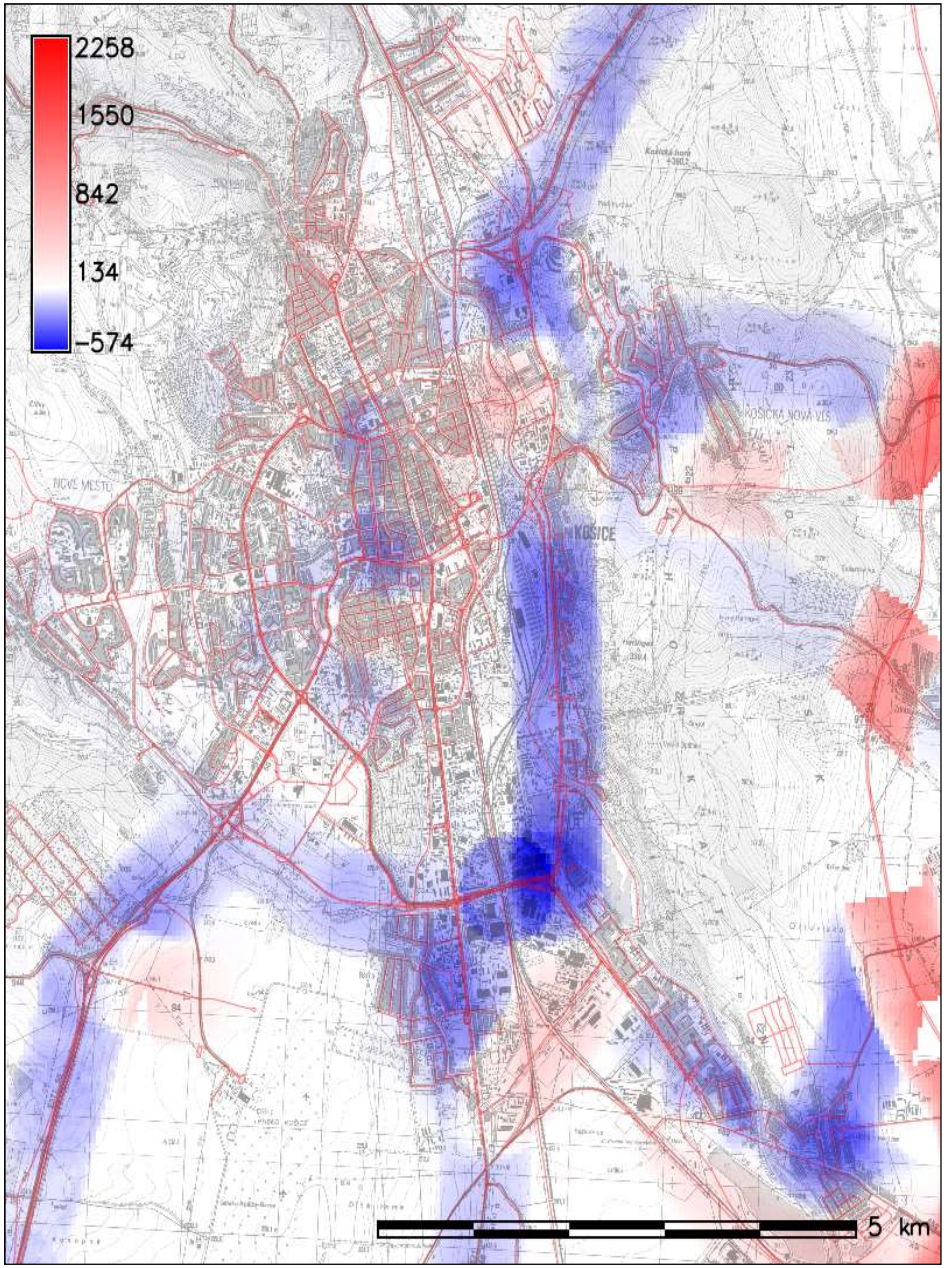
Emisná hustota $PM_{2,5}$ - nulový variant (kg/rok/ha)



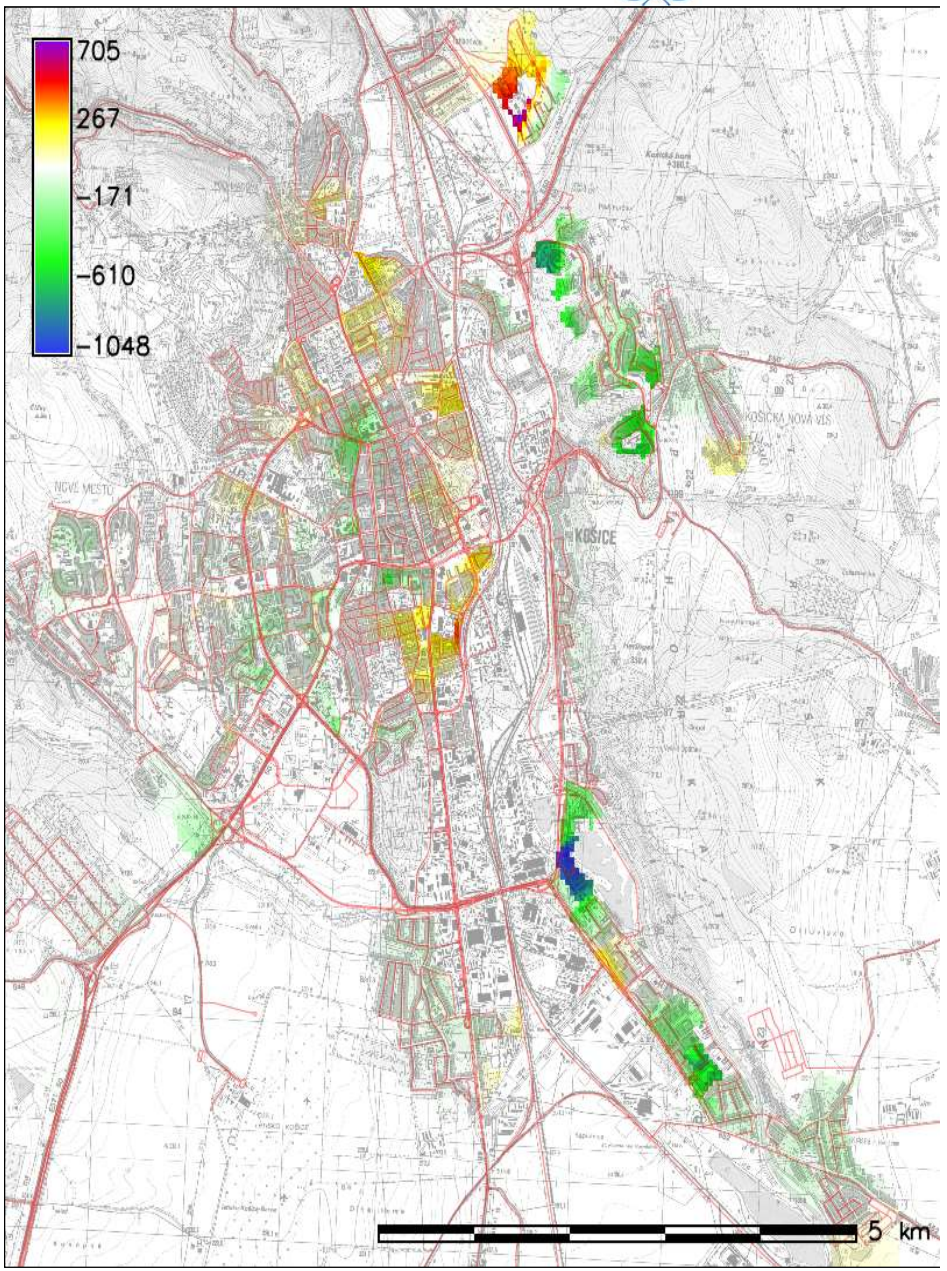
Emisná hustota $PM_{2,5}$ - návrhový variant (kg/rok/ha)



Emisná hustota $PM_{2,5}$ - rozdielová mapa (kg/rok/ha)



Emisná hustota $PM_{2,5}$ - rozdielová mapa (kg/rok/ha).(obyv/ha)



Proposed mitigation measures

- To apply additional measures to decrease dust in the city – i.e. to clean the streets on a regular basis (twice a week)
- To implement measure to protect inhabitants from noise in the most affected areas (noise protection walls, better windows)
- To construct certain new roads only if not other transport option is available (to avoid effects to nature)
- Selection on alternatives for specific road sections based on likely impacts on human health (air, noise) and biodiversity

The most of the recommendations were integrated in the final version of the Strategy

Success factors

☺ Primary goals of the Strategy

☺ Transport experts open for communication

☺ Timing of SEA i.e. initiation of SEA process together with start of the planning process

☺ Existence of the transport model enabling calculations of future noise levels and emissions to the air


Questions or comments?
Thank you for your attention!
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