EaPGREEN
Partnership for Environment and Growth

This project is funded by the EU

# Case examples on effects analysis (including evaluation of alternatives) and mitigation measures

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Training of Trainers

3 – 6 November 2015, Kakheti, Georgia

Mr. Michal Musil

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# Case Examples

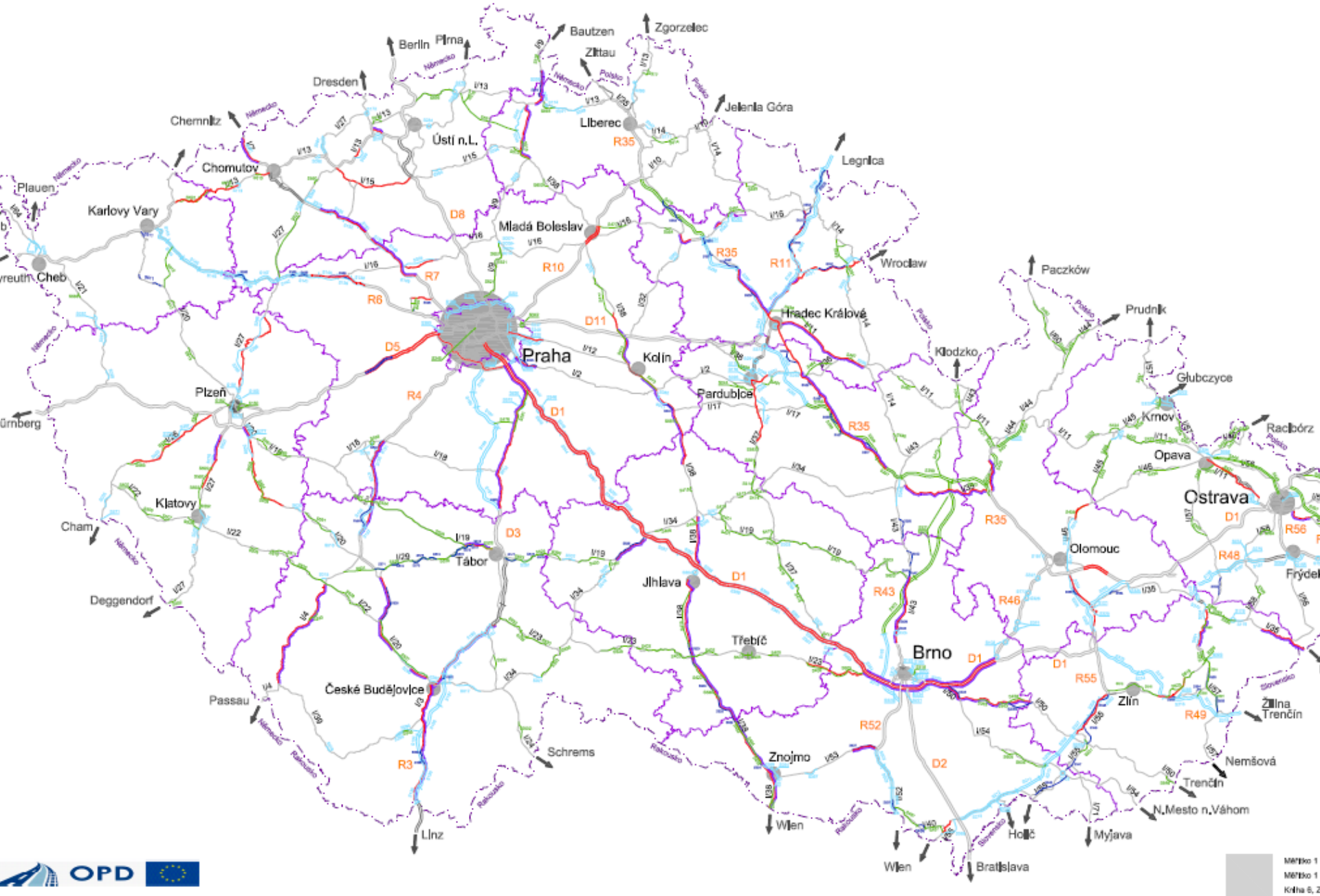
1. Evaluation of effects: SEA for Transport Sectorial Strategy 2, Czech Republic
2. Considering alternatives: SEA Master Plan for City of Orhei, Moldova
3. Considering alternatives: SEA for National Waste Management Plan of Montenegro for 2015 – 2020
4. Mitigation measures: SEA for Transport Sectorial Strategy 2, Czech Republic

# Case Example 1:
# SEA for Transport Sectorial Strategy 2

- Strategy deals with 1270 road projects in 260 clusters, 360 railway in 90 clusters, and 20 water transport projects in 3 clusters
- It applies Multi-Criteria Analysis (MCA) for selection of priority investments
  - Desirability of a project (transport, economic, social)
  - Realization obstacles (land-use planning, environmental)
  - Preliminary Cost-benefit analysis

- Transport model supplies information on present and future transport intensities on network and their changes in case implementing individual investments
- GIS data only for corridors (digital map with +/- 1 km accuracy)

# Kapacitní nedostatky a opatření na silniční síti (silniční síť roku 2014, dopravní intenzity roku 2050)




OPD

# SEA approach

- Objective-led approach on the strategic level (Strategy goals)
- Assessment of risks on the level of project clusters
  - **Key issues:** Air quality, Landscape and Biodiversity, Public Health
  - **Secondary issues:** Soil, water, cultural heritage, climate change

- Problems and limitations
  - High number of specific projects/clusters (with various level of information available)
  - Accuracy and scale of available data
  - Level of detail of the transport model

# Criteria for assessment i.

**Air quality**

- Changes in traffic intensities:
  - In urban areas (present and new roads, increse or reduction of intensity under 15 000 cars/day)
  - In areas with sensitive ecosystems (protected areas, forests, areas with elevation over 800 meters above sea level)
- Total emissions in „areas with low air quality“

**Public Health**

- Emissions in Urban areas
- Noise (izoline  60 dB)
- Socio-economic considerations (availability of transport travel to work, social and health services)

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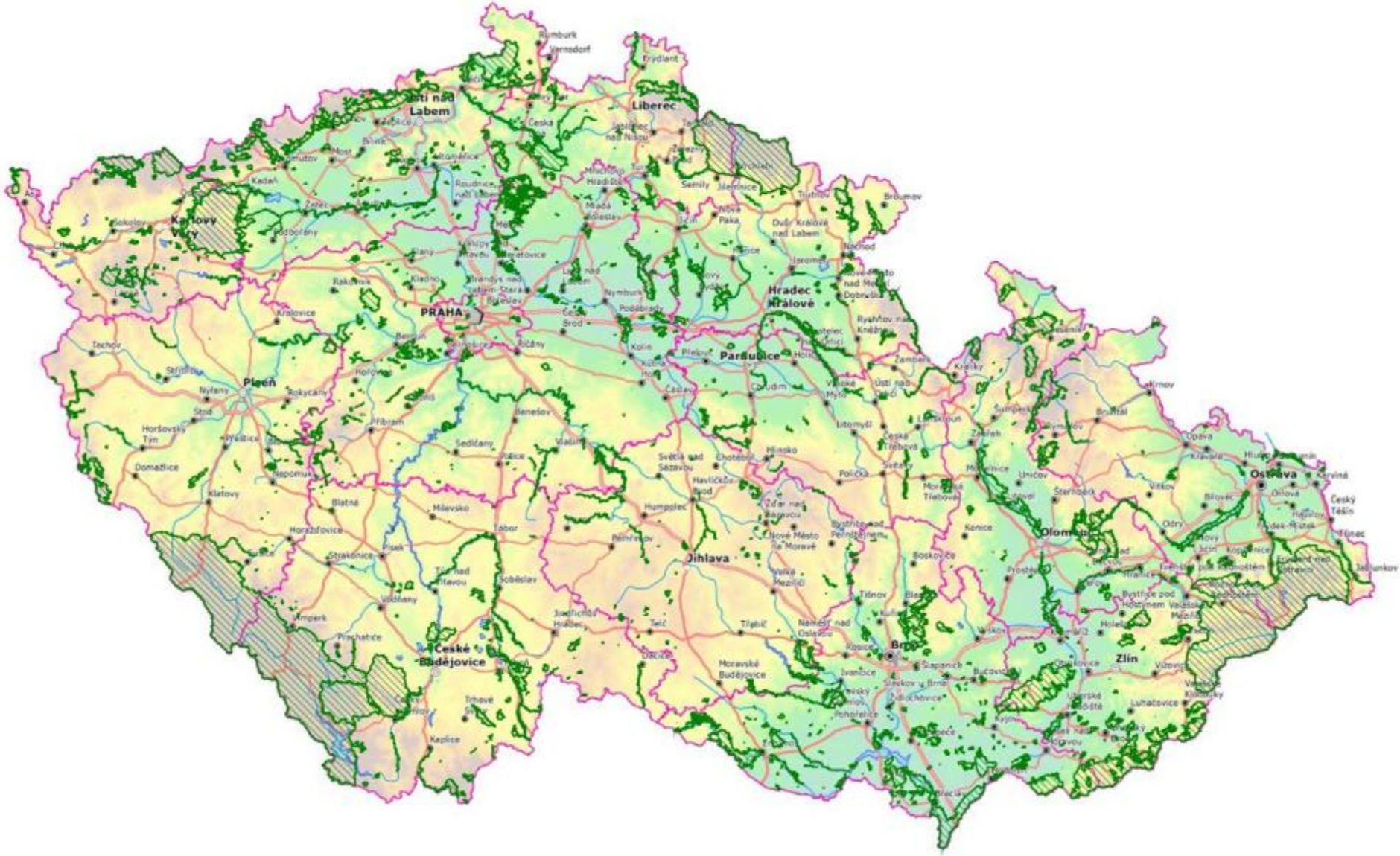
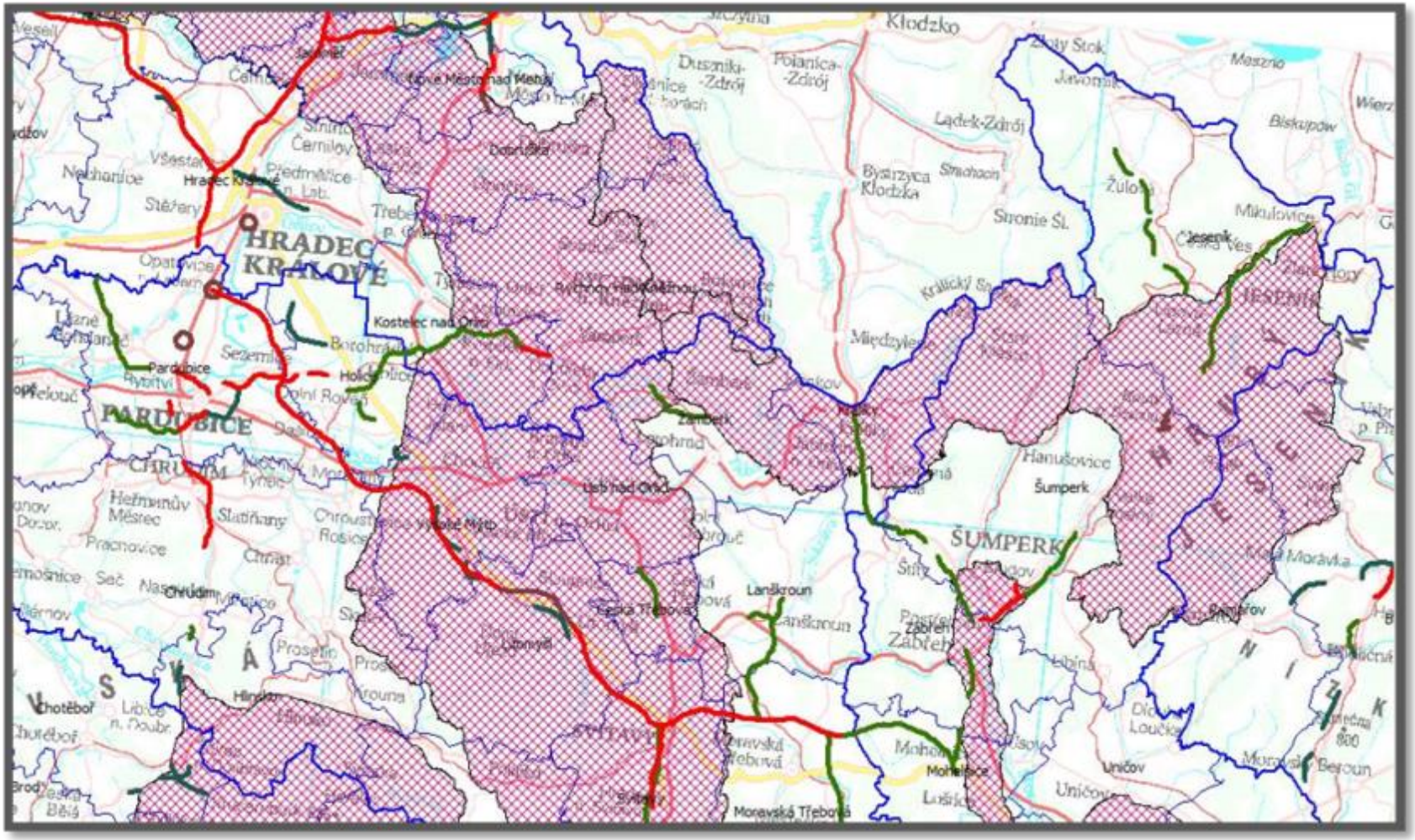
# Criteria for assessment ii.

Nature, Landscape, Biodiversity

- Natura 2000 site
- Protected area; habitats of protected species;
- Potential loss of natural biotopes
- Important landscape feature, part of the „ecological stability network“
- Landscape fragmentation (new projects in non-fragmented area, areas important for wildlife migration)
- Water regime (wetlands, protected areas for water accumulation, large forest areas)


Ústí nad Labem
Liberec
Karlovy Vary
Hradec Králové
PRAHA
Pardubice
Plzeň
Jihlava
Ostrava
Olomouc
Zlín
Brno
České Budějovice


Kłodzko
Duszniki-Zdrój
Polanica-Zdrój
Lądek-Zdrój
Stronie Śl.
Międzylesí
HRADEC KRÁLOVÉ
PARDUBICE
Kostelec nad Orlicí
Borohrádek
Holice
Česká Třebová
Lanškroun
ŠUMPERK
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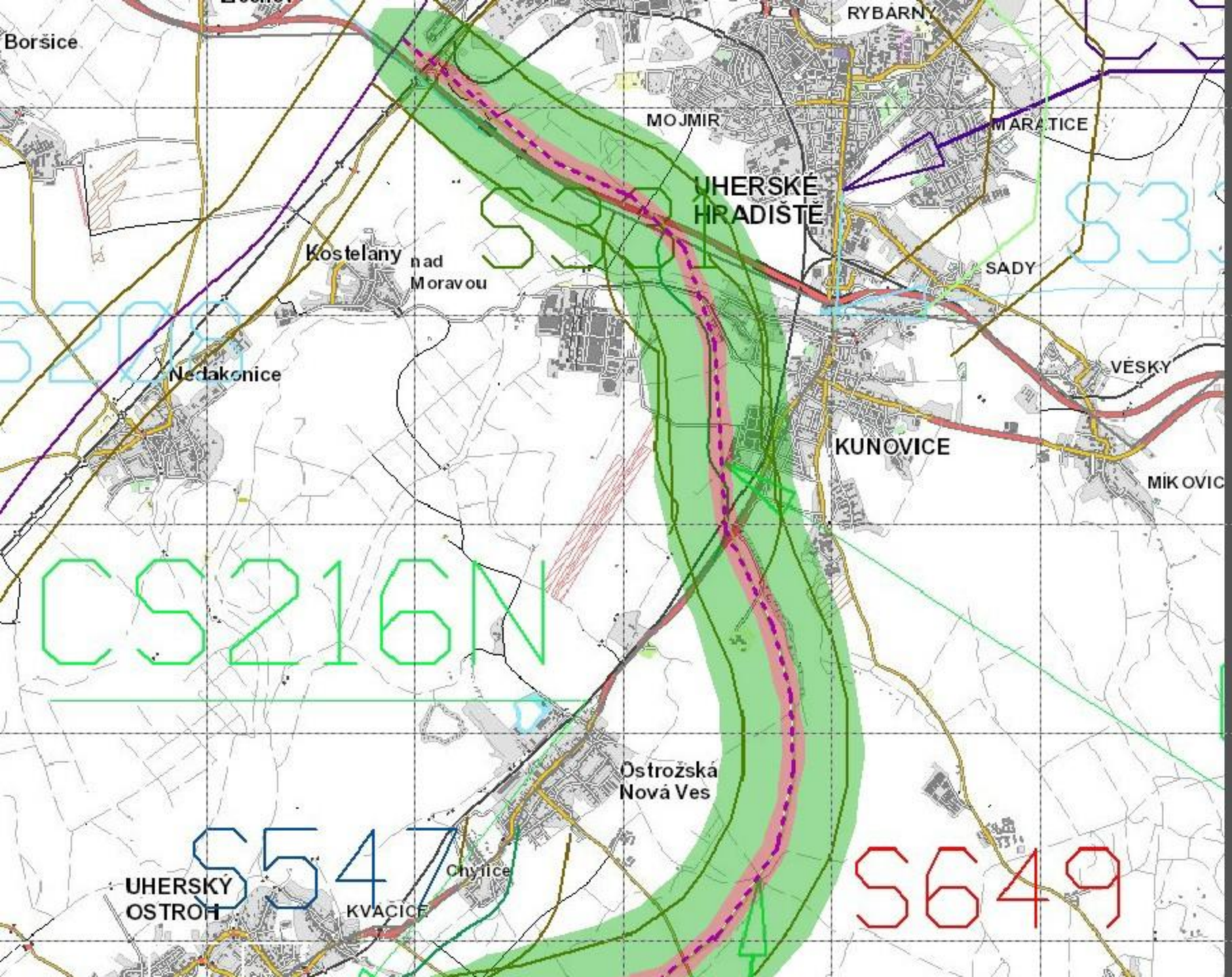
Hanušovice
Jeseník
Mikulovice
Uničov
Moravský Beroun
Chotěboř


Borsice
RYBARNY
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Nedakonice
VESKY
KUNOVICE
MIKOVIC
CS216N
Ostrožská
Nová Ves
S547
Chylice
UHERSKÝ
OSTROH
KVAČICE
S649

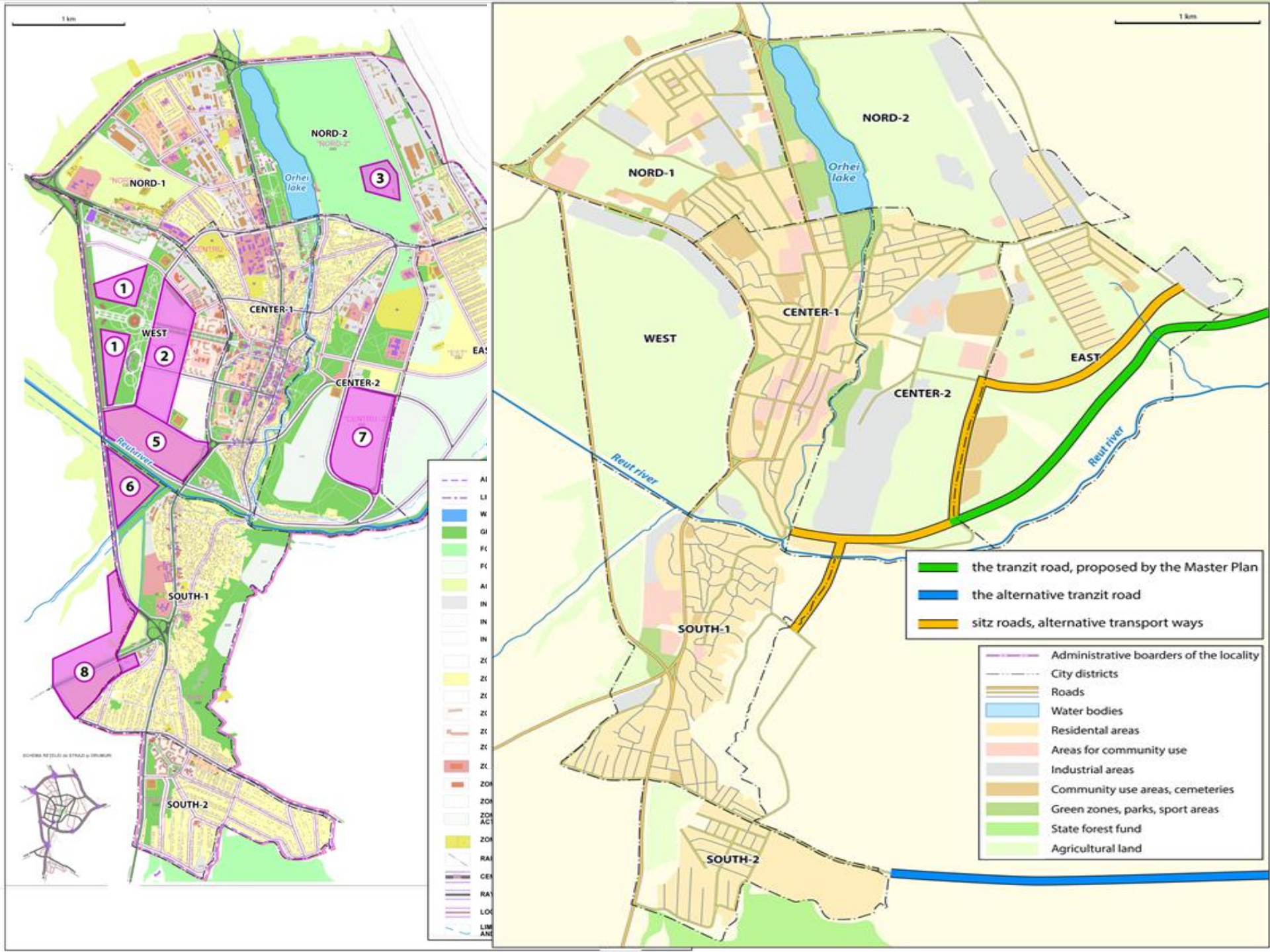
# Evaluation matrix

*Note: the matrix will be presented directly from the SEA Report*

| | | ovzduší | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **č. clusteru** | **popis** | **dotčení citlivých oblastí** | | | | | **dotčení citlivých oblastí - souhrn** | | **kumulativní vliv** | **odvedení dopravy** | **celkové hodnocení** | **komentář ovzduší** | **popis** | **celkové hodnocení zdraví** | **hluk** |
| | | **les** | **>800 m.n.m.** | **VCHÚ** | **OZKO** | **zastav. území** | **vliv na zdraví lidí** | **vliv na ekosystémy** | | | | | | | |
| 002P | D1 Mirošovice - Kývalka opravy | 0,12458 | 0 | 0 | 0 | 0,03462 | -0,22 | -0,41 | -0,82 | 0,00 | **-0,79** | minimální dotčení citlivých oblastí, nedochází k nárůstu emisí, zachovává intenzitu >15000 voz/den v zástavbě (zejména Velké Meziříčí a obce v blízkosti Prahy) | D1 Mirošovice - Kývalka opravy | -2 | stavby přinesou vyšší dopravní zátěž.Mapy nejsou. -1 |
| 003P | D1 Kývalka - Holubice rozšíření | 0,00104 | 0 | 0 | 0,60061 | 0,11402 | -0,74 | 0,00 | -1,74 | 0,00 | **-1,35** | minimální dotčení ekosystémů, zvyšuje znečištění v oblasti s překročenými limity, zachovává intenzitu >15000 voz/den v zástavbě, významný negativní kumulativní vliv | D1 Kývalka - Holubice rozšíření | -3 | konfliktní stavba, šestiproud přinese nový hluk, není k dispozici mapa -2 |
| 004P | D1 Říkovice - Přerov | 0 | 0 | 0 | 1 | 0,04259 | -0,28 | 0,00 | -1,73 | 1,21 | **-0,43** | minimální dotčení ekosystémů, zvyšuje znečištění v oblasti s překročenými limity, významný negativní kumulativní vliv | D1 Říkovice - Přerov | -1,5 | překročení hlukového limitu v Předmostí a Přerově, u dalších obcí hluk na úrovni obtěžování -2 |
| 005P | D3 STC | 0,13442 | 0 | 0 | 0 | 0,0181 | -0,12 | -0,44 | -0,52 | 1,59 | **0,28** | málo významné dotčení citlivých oblastí, zachovává intenzitu >15000 voz/den v zástavbě | D3 STC | -4 | Nová hluková zátěž do rekreačního území , 43 obcí bude v hluku 50 - 60 dB a tedy obtěžováno, v Rakousích a Libeři překročení limitu hluku -2 |

# Case example 2:
# SEA Master Plan for City of Orhei (2014)

1. ‘Zero’ or ‘no-development; option
2. Alternative proposals for the bypass road in the framework of 2015 Master Plan
3. Comparison of the Master Plan Orhei 2015 and Master Plan of 2008


1 km
NORD-2
NORD-1
Orhei lake
3
1
1
2
CENTER-1
WEST
CENTER-2
5
7
6
Reut river
SOUTH-1
8
SOUTH-2
1 km
NORD-2
NORD-1
Orhei lake
CENTER-1
WEST
EAST
CENTER-2
Reut river
Reut river
SOUTH-1
SOUTH-2
the tranzit road, proposed by the Master Plan
the alternative tranzit road
sitz roads, alternative transport ways
Administrative boarders of the locality
City districts
Roads
Water bodies
Residental areas
Areas for community use
Industrial areas
Community use areas, cemeteries
Green zones, parks, sport areas
State forest fund
Agricultural land

| No. of the zone | Functional designation of land of the previous Master Plan 2008 | Functional designation of land of the current Master Plan 2015 | Impact on the environmental components | | | | Comments (arguments for level of impact identified) |
|---|---|---|---|---|---|---|---|
| | | | Air | Water | Soil | Biodiversity | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | Industrial production zone | Complex recreation zone with sport and touristic elements and water bodies | **+2** | **+1** | **+1** | **+2** | **+1,+2** Elimination of the impact of the pollution from the industrial units on the atmospheric air, reduction of floods, reduction of pollution of water bodies. Due to the collection of funds from the recreation sites improvement of landscape and of recreational functions of the area |
| 2 | Zone of living areas with block apartments buildings | Complex recreation zone with sport and touristic elements and water bodies | **+1** | **+1** | **+1** | **+1** | **+1** Elimination of the impact of the pollution from the industrial units on the atmospheric air, reduction of floods, reduction of pollution of water bodies. Due to the collection of funds from the recreation sites improvement of landscape and of recreational functions of the area |

# Case example 3: SEA for National Waste Management Plan of Montenegro for 2015 – 2020

- Original plan:
  - 5 waste management regions with 5 sanitary landfills be constructed.
  - It includes the existing landfill in Podgorica, Bar and proposed landfills in Berane, Nikšić and Herceg Novi

# Strategic alternatives

**Alt 1: 5 waste management regions with 5 sanitary landfills** be constructed - it includes 2 existing landfills in Podgorica, Bar and proposed landfills in Bijelo Polje, Nikšić and Herceg Novi.

**Alt 2: 3 waste management regions with 3 sanitary landfills** be constructed - it includes 2 existing landfills in Podgorica, Bar and one proposed landfill in Bijelo Polje for the north region area.

**Alt 3: 1 waste management region which would cover the entire country and it would also include a thermal waste treatment plant (waste-to-energy plant)**, which will be located in the municipality that shows initiative regarding the construction of thermal waste treatment and preparation of all necessary conditions.

# Local alternatives

# Comparison of local alternatives

*Note: Evaluation matrix will be presented directly from the SEA Report*

| Impacts / Risks | Sanitary landfill - Bijelo Polje | | | | | | Clarifications and recommendations (e.g. The best option, mitigation measures) |
|---|---|---|---|---|---|---|---|
| | Čelinska Kosa 1 | Čelinska Kosa 2 | Kumanica | Zaton | Ramčina | Goja | |
| **Biological and landscape diversity, protected areas** | Close to biocorridor of southeast Dinarides, proximity to the Emerald net Dolina Lima, visible from the mountain routes | Within the Emerald Network of Lim Valley, visible from the road | The vicinity to the Emerald Network, partially visible from the road | proximity to the Emerald Network of Lim Valley | proximity to the Emerald Network of Lim Valley | proximity to the Emerald Network of Lim Valley, seen up close | In terms of biodiversity, the best options are Zaton and Ramčina considering they are outside of the biocorridor and outside the Emerald Network, and the least acceptable is Čelinska Kosa 2 because it is located within the area of the Emerald Network.<br>Given the importance of the landscape, favorable locations are visually hidden and they cannot be seen from frequent traffic routes. Unfavourable locations are Kumanica and Goja. |
| **Population, public health** | Rural area | Rural area | Rural area | Rural area | Rural area | Rural area | Since there were no significant differences in the distance from residential buildings (up to 1000 m), the locations are equally favorable. Location Goja is nearest to residential buildings and is considered the least favorable. |

# Comparison of local alternatives

*Note: Evaluation matrix will be presented directly from the SEA Report*

| Impact / risk | INITIAL PROPOSAL | | | | | | OPTION 1 | | | | | | OPTION 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sanitary landfill - Vasov Do (Berane) | | Sanitary landfill - Budoš (Nikšić) | | Sanitary landfill - Duboki Do (Herceg Novi) | | Sanitary landfill - Bijelo Polje (Ramčina, Zaton) | | Sanitary landfill - Budoš (Nikšić) | | Sanitary landfill - Duboki Do (Herceg Novi) | | Sanitary landfi Bijelo Polje (Ramčina, Zatc | |
| | Reg. operation | Accident | Reg. operation | Accident | Reg. operation | Accident | Reg. operation | Accident | Reg. operation | Accident | Reg. operation | Accident | Reg. operation | Acc n |
| Air | | | | | | | | | | | | | | |
| Climate factors | | | | | | | | | | | | | | |
| Water | | | | | | | | | | | | | | |
| Land, soil | | | | | | | | | | | | | | |
| Biological and landscape diversity | | | | | | | | | | | | | | |
| Population, public health | | | | | | | | | | | | | | |
| Cultural heritage | | | | | | | | | | | | | | |
| Material assets | | | | | | | | | | | | | | |

# Case example 4: SEA for Transport Sectorial Strategy 2, Czech Republic

*Note: Proposed mitigation measures will be presented directly from the final SEA Statement for the Strategy (see handout)*