Methodology for environmental audit of existing transport infrastructure (EADI)

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Introduction

Introduction

Czech Republic

Northern Bohemia

Liberec region

Introduction

National roads:

No. 13 - before 2000

No. 35 - after 2000

National road no. 35

➢ Was built after 2000
➢ Has all the elements for environmental protection

➢ 4 long bridges over the valleys

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National road no. 35

➢ ecoduct

National road no. 35

➢ Fences and permanent barriers for amphibians

National road no. 35

> Sedimentation objects and retention ponds

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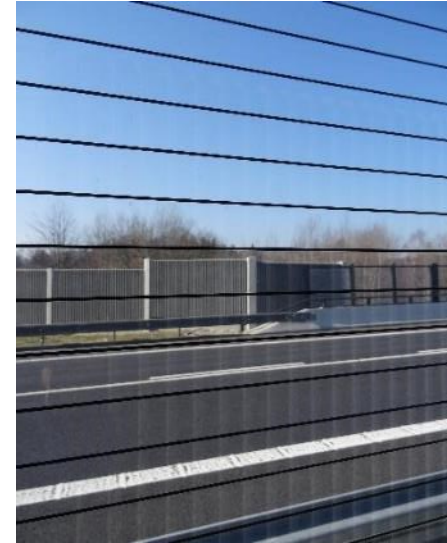
National road no. 35

➢ Noise barriers with horizontal stripes to prevent bird mortality

National road no. 35

➢ Planting of trees and srubs

National road no. 13

➤ Was bulit before 2000
➤ Unsufficient environmental measures

National road no. 13

➢ Completely backfilled valley and the pipe culvert

National road no. 13

➢ Overpass for forest mechanization and pipe culvert

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Introduction

This example demostrates two importants facts:

➢ Positive – significant progress in new transport infrastructure

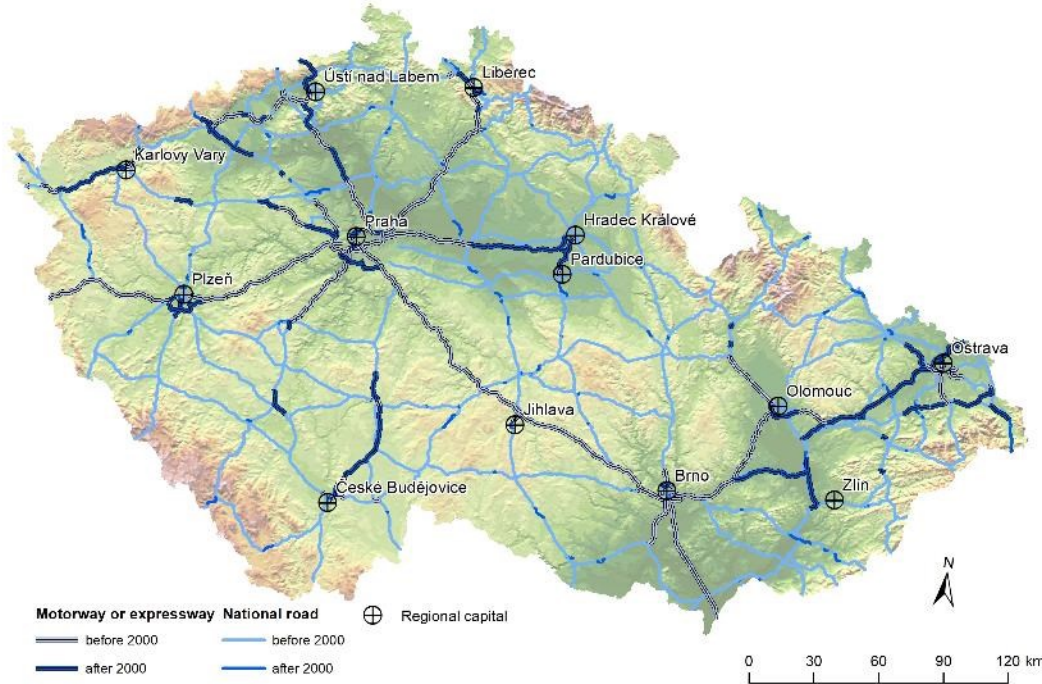➢ Negative – extensive environmental burdens on old roads

Environmental problems of old transport infrastructure

The importance of the issue arises mainly for two reasons:

➢ Extent of old road network

➢ The need to comprehensive approach to the environment

Motorwav and national road built before and after 2000

Motorwav built:
- before 2000   1018 km
- afer 2000   692 km

National road built:
- before 2000   5147 km
- after 2000   368 km

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Transport and environment

Main environmental impacts:

- Noise pollution
- Chemical contamination of soil, watercourses, water sources
- Animal-vehicle collisions
- Transformation and destruction of habitats, land take
- Fragmentation of the landscape
- Impact on water regime - water sources, watercourses
- Disturbing of landscape character

Transport and environment

Legenda
- hranice ČR
- sít železnic
- sít silníc
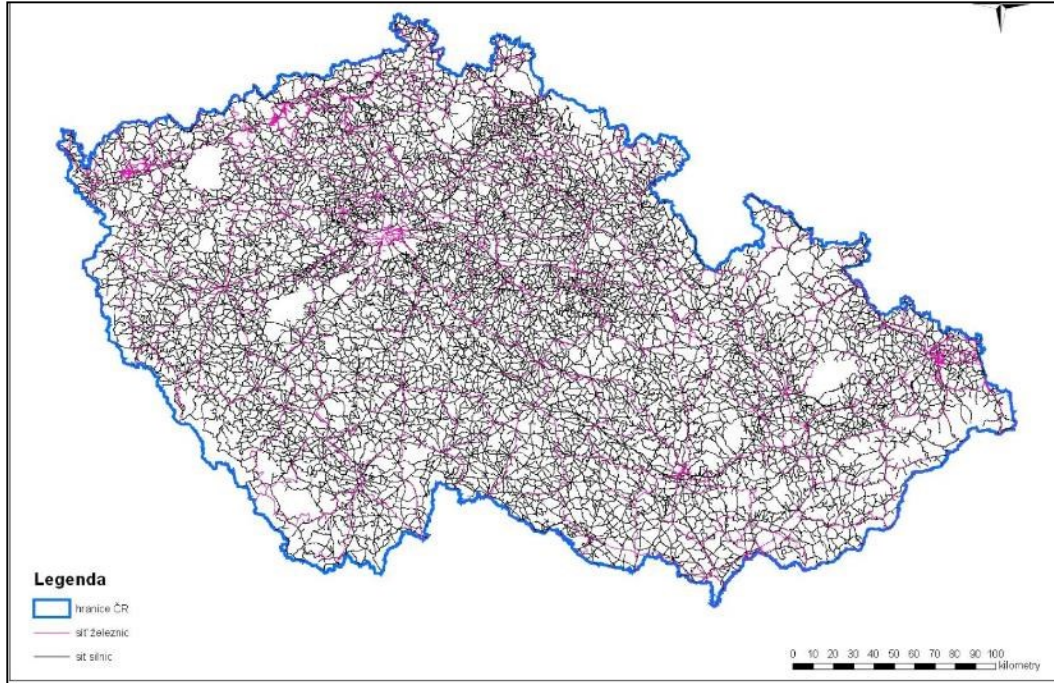
Transport infrastructure
Total   55 792 km

Environmental problems of old transport infrastructure

The main obstacle to solving this problem in the Czech Republic is the absence of mandatory legislative and methodological processes.

New x old transport infrastructure

➤ New constructions – systematical environmental assessment – SEA, EIA …

➤ Old infrastructure – systematical assessment of environmental impacts is missing (!)

Environmental audit of transport infrastructure (EADI)

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EADI requirements

1. Responsibility of the road administrator

➢ EADI should be the basis for planning and managing of optimalization meassures

➢ EADI should become a regular aktivity as are:
- Road safety audits
- Technical inspections of roads, bridges and other facilities

EADI requirements

2. Practical focus

➢ Only the main problem components are evaluated

➢ The emphasis is on such outputs that are realistically feasible

➢ EADI does not address the issue of noise and air quality which is the responsibility of the hygiene service

➢ EADI is not a scientific study (!!!), but practical tool for road managers

EADI requirements

3. Preventive character

➢ The aoal is to look for critical points in time before serious consequences occur

➢ Prevention also saves money.

EADI preparation

➤ EADI methodology completed in 2021

➤ Contracting authority: Ministry of Transportation

➤ Authors:
Centrum dopravního výzkumu v.v.i., Brno, ČR
(in cooperation with Evernia s.r.o., Liberec, ČR)

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Structure of EADI

The structure is hierarchical:

1. Environment

2. Selected component: (B) biota, (V) water + soil, (K) landscape

3. Key problem areas

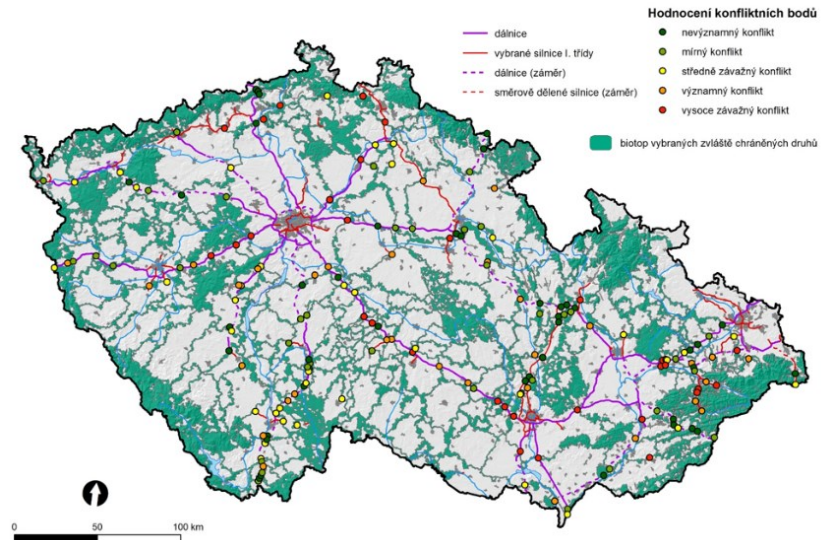4. Critical places

Structure of EADI

Key problem areas:

➤ The most serious and commonly occurring risk factors

➤ Problems with real solutions

➤ Thev form a coherent issue - each has its own clear methodological basis

Key problem areas - biota

B1 Large mammal migration

Hodnocení konfliktních bodů
- nevýznamný konflikt
- mírný konflikt
- středně závažný konflikt
- významný konflikt
- vysoce závažný konflikt

— dálnice
— vybrané silnice I. třídy
-- dálnice (záměr)
-- směrově dělené silnice (záměr)

biotop vybraných zvláště chráněných druhů

0   50   100 km

AOPK, 2017

Key problem areas - biota

B1 Large mammal migration

B2 Animal-vehicle collisions

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Key problem areas - biota

B1 Large mammal migration

B2 Animal-vehicle collisions

B3 Critical sites for amphibians

úseky vysoké mortality obojživelníků

AOPK, 2017

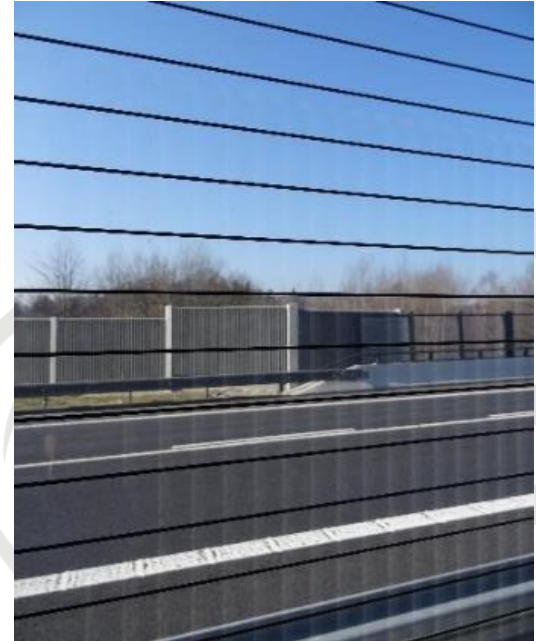0   50   100 km
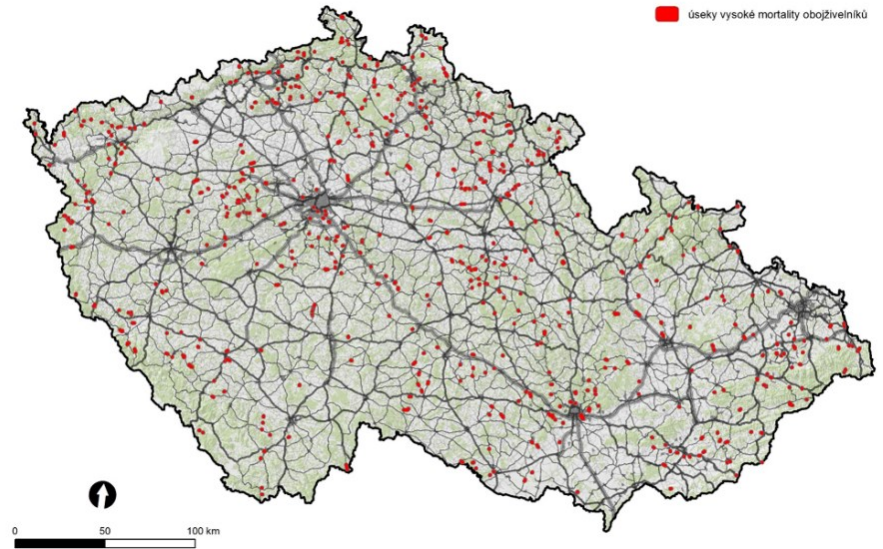
Key problem areas - biota

Key problem areas - biota

Key problem areas - biota

B1 Large mammal migration

B2 Animal-vehicle collisions

B3 Critical sites for amphibians

B4 Migration along watercourses

Key problem areas - biota

B1 Large mammal migration

B2 Animal-vehicle collisions

B3 Critical sites for amphibians

B4 Migration along watercourses

B5 Fencing design

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Fencing design

Fencing design

Key problem areas - biota

B1 Large mammal migration

B2 Animal-vehicle collisions

B3 Critical sites for amphibians

B4 Migration along watercourses

B5 Fencing design

B6 Noise barriers

Key problem areas - biota

B1 Large mammal migration

B2 Animal-vehicle collisions

B3 Critical sites for amphibians

B4 Migration along watercourses

B5 Fencing design

B6 Noise barriers

B7 Impacts on vulnerable sites (Natura 2000 and other protected areas...)

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EADI processing procedure

A. Introductory part

- Selection of evaluated road section
- Screening and scoping – specification of priorities according to local conditions
- Preparation of input documents – maps, databases, etc.

EADI processing procedure

B. Field survey
C. Evaluation of results and risk identification
D. Proposal of measures

As individual key problem areas deal with various topics, the specific procedures for processsing points B, C, D also differ.

 These procedures are described in methodological manual.

Kev problem areas – water and soil
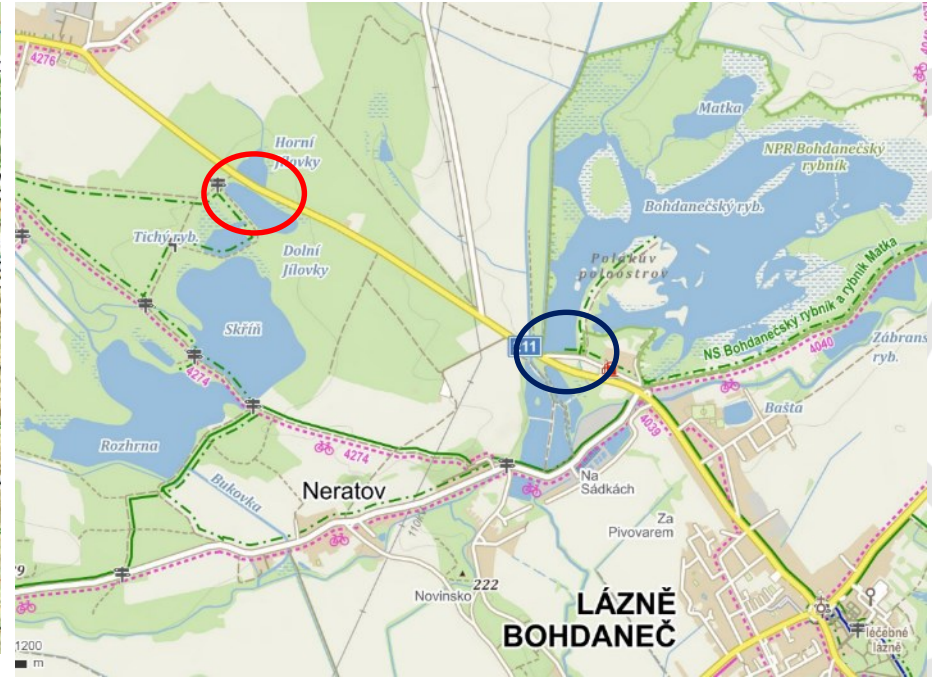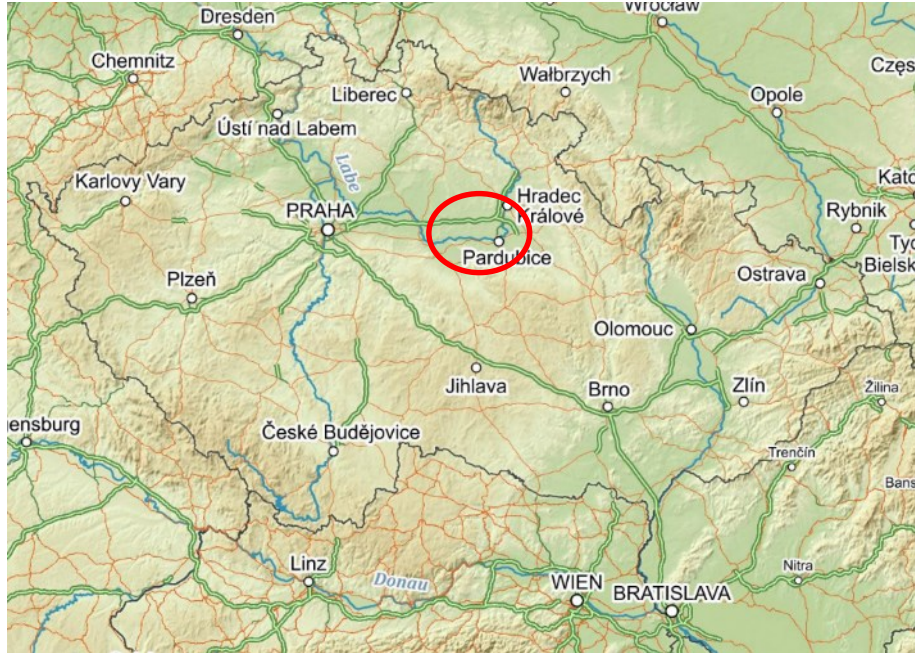
Kev problem areas – water and soil

Key problem areas – water and soil

EADI processing procedure

E. Conclusion

recommendation for road administrator for futher actions

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EADI implementation

➤ EADI is the stimulus for addressing "old environmental burdens" on existing roads

➤ EADI is a certified methodology of the Ministry of Transport of the Czech Republic

➤ It's application is currently on a voluntary basis

➤ As the vast majority of the transport network in the Czech Republic is state owned, the application of EADI is in the hands of the state administration

Conclusion

Conclusions

➢ The EADI methodology is practical in nature and focuses on problems that can be solved within the competence of individual road managers

➢ Its outputs are applicable for preventive protection of the environment and for planning subsequent investment actions

➢ The EADI methodology is one way of addressing the serious problem of the environmental impact of the old road network
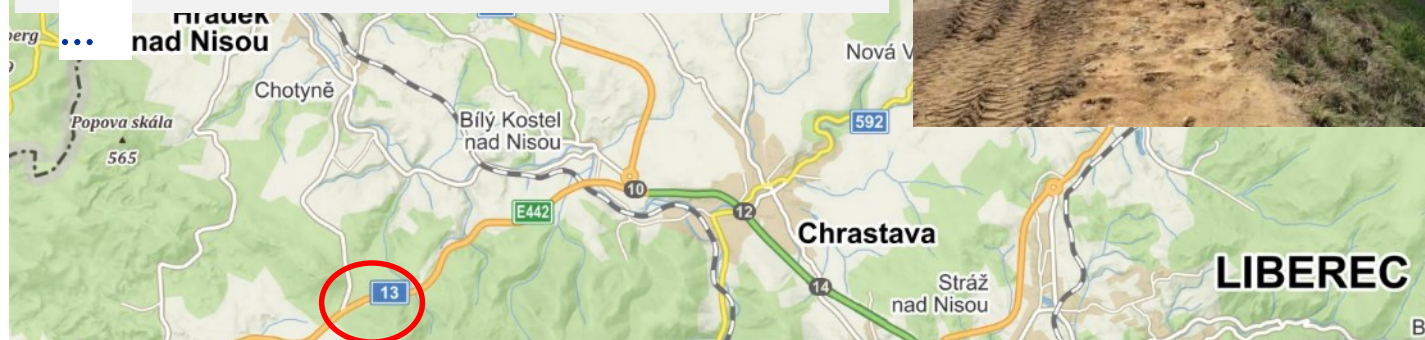
... at the very end.

National road no. 13
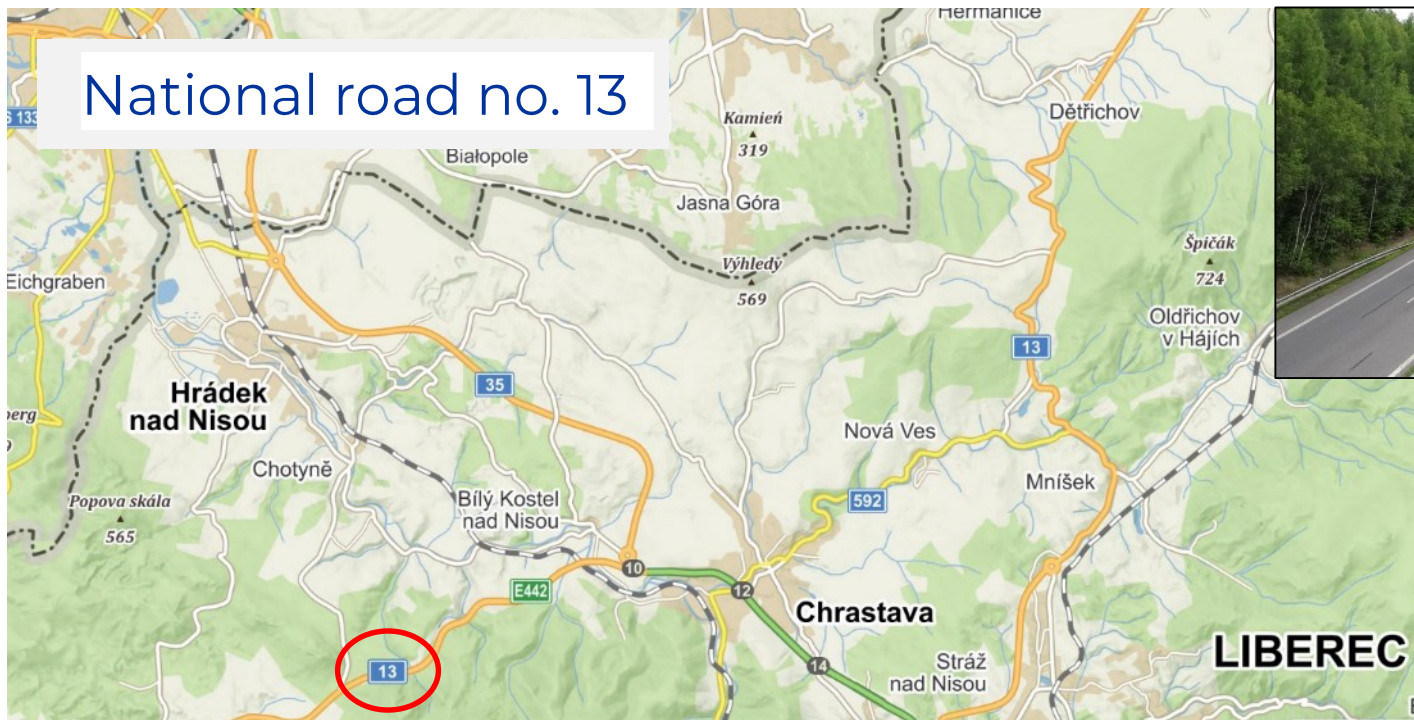
... at the very end.

National road no. 13

Optimistic news: affter more than 20 years since the first desian of this ecoduct. its contruction began this year ...

LIBEREC

Thanks for your attention

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Fotografie: Ivo Dostál, Petr Anděl